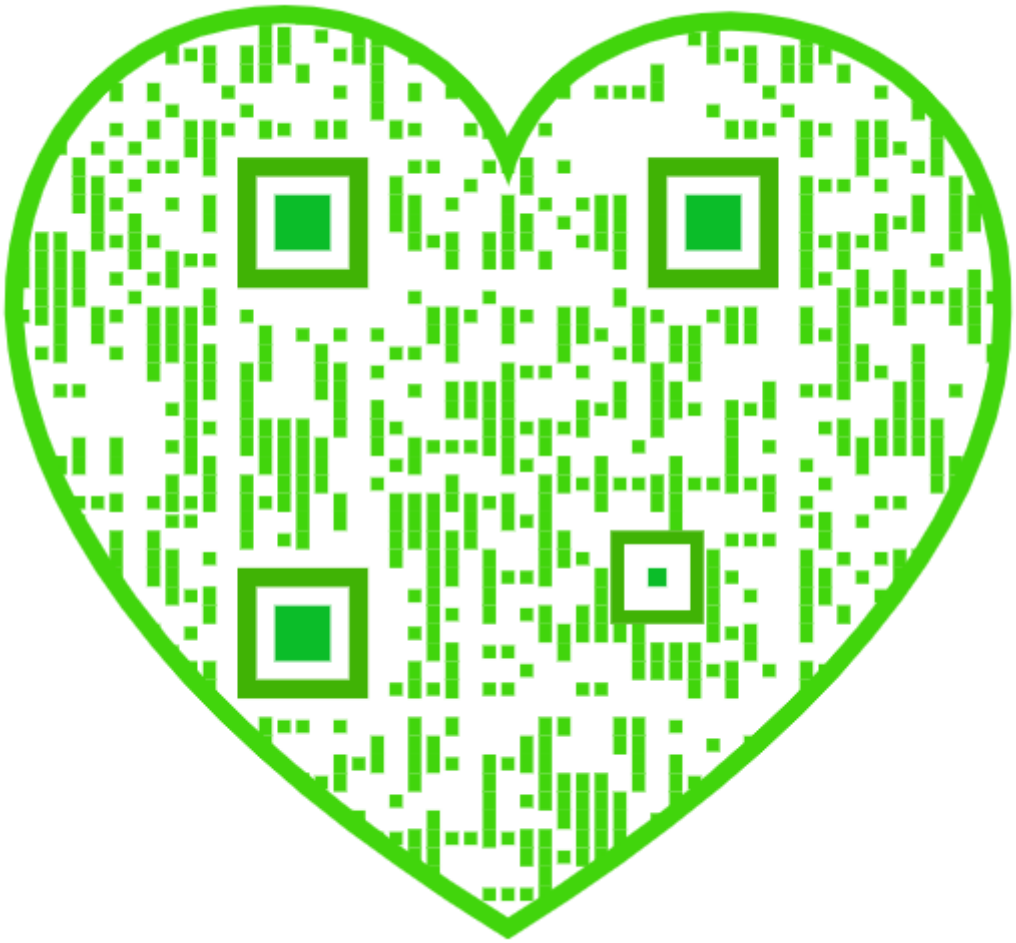

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DISEASES OF WOMEN.

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THE

PATHOLOGY, DIAGNOSIS, AND TREATMENT

OF

DISEASES OF WOMEN,

INCLUDING THE

DIAGNOSIS OF PREGNANCY.

BY

GRAILY HEWITT, M.D. Lond., F.R.C.P.

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THIRD EDITION, REVISED AND ENLARGED.

WITH NUMEROUS ILLUSTRATIONS.

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1872.

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5/53

TO

SIR CHARLES LOCOCK, BART., M.D.

FIRST PHYSICIAN-ACCOUCHEUR TO HER MAJESTY THE QUEEN,

IN ADMIRATION OF HIS PROFOUND KNOWLEDGE

AND GREAT PRACTICAL SKILL

IN THE

DIAGNOSIS AND TREATMENT OF THE DISEASES OF WOMEN,

THIS WORK IS

RESPECTFULLY DEDICATED

BY HIS OBLIGED

AND VERY FAITHFUL SERVANT,

THE AUTHOR.

PREFACE

TO

THE THIRD EDITION.

This New Edition of my Treatise on 'Diseases of Women' is substantially a new work.

The first edition was mainly a summary and a criticism of the then existing knowledge on the subject of the Diseases of Women. The second edition contained numerous pictorial illustrations of my own observations, with what may be termed suggestions of an improved system of uterine pathology. The present, the third edition, contains certain generalizations on the important questions of the pathology of diseases of the uterus, which have forced themselves on my attention in the course of several years' experience, and which involve the adoption of views in reference to the pathology and treatment of diseases of the uterus which are new as compared with those embodied in the early editions of this work.

The 'mechanical' system of uterine pathology now put forward is not a speculative theory. If I had published it when I first conceived it, some years ago, it would have been a speculation only, but the system as now enunciated commends itself to my judgment as true, inasmuch as I have found it in conformity with daily observation for five or six years past. These views on the subject are, therefore, not novel so far as I am personally concerned, but I have not until the present time felt myself warranted in giving so decided a public expression to them.

In support of these doctrines I have thought it expedient to embody the series of observations made by myself on the subject of the Diseases of Women at University College Hospital, during a period of over four years. These observations impart a clinical character to the work, which may be useful from other points of view.

The arrangement of the first edition of this work, devised to facilitate the study of the subject, particularly the Diagnosis, was somewhat modified in the second edition, and has been very much modified in the present issue. The work has now been made more systematic from a pathological point of view, while the special feature, the particular attention to 'Diagnosis,' which perhaps had some influence in rendering the early edition acceptable, has not been in any essential degree sacrificed.

About twenty new illustrations are added to the present edition. The illustrations in the work are for the most part original, and the greater part of them carefully-planned representations of cases which have been under my own observation in the wards of University College Hospital and elsewhere. These were in the first instance carefully drawn in outline, life size, by myself, subsequently reduced by the camera, and made to assume their present form by the artistic hands of the late Mr. Bagg. The attempt has here been made by means of two sectional views of the same object to convey a more exact idea of the size and relations of certain pelvic tumours. Some of the illustrations (eight) are from original drawings by Dr. Arthur Farre, in Todd's Cyclopædia of Anatomy and Physiology, article 'Uterus.' The sources of a few from other publications are duly indicated. The present edition contains representations of a few instruments drawn, in order to ensure accuracy, from photographs.

G. H.

36, Berkeley Square,
Sept. 1872.

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CHAPTER I.

GENERAL PATHOLOGY OF THE FEMALE SEXUAL ORGANS.

Introductory Remarks.—Exposition of the 'Mechanical' System of Uterine Pathology—Clinical Aspects of the Question—Analysis of 1,205 Cases of Diseases of Women at University College Hospital, with Tabular Statement—Importance of Affections of the Ovaries.

The experience which has accrued to me during the nine years which have elapsed since the appearance of the first edition of this work has had the result of inducing such a change in the ideas which I had originally adopted, and which had been handed over to me, as it were, by previous writers, that it is necessary at this time, and with the facts before me which I have accumulated, to re-write the greater portion of what relates to the pathology of the uterus.

Gradually, but steadily and certainly, a system of pathology of the uterus essentially different from that which has generally been received up to the present time has forced itself on my acceptance, has become the basis of my treatment, and has to my judgment, in every way possible, shown itself trustworthy, sound, and reliable.

'Inflammation of the uterus' has been generally regarded as the starting-point of uterine disease. Indeed, to go back to the days of Dr. Henry Bennet's first exposition of his theory of uterine pathology, it was for some time considered that the starting-point was inflammation of that limited portion of the uterus which is to be seen by the aid of the speculum, the os uteri; ulceration of that portion of the uterus being conjoined with the inflammation to account for the pains, troubles, and inconveniences referred to the generative organs.

This limitation of inflammation to the os uteri has been repudiated by succeeding writers, while the value of the appearances at the os uteri described as 'ulceration' has undergone a destructive and annihilating criticism at the hands of more than one writer.

That the body of the uterus is equally liable with the cervix to important structural lesions has been most ably argued by Scanzoni, and in the second edition of this work the same line of argument was adopted, and the important relations of the nutritive changes in the uterus to inflammation were pointed out.

It is now, however, time to go a step beyond this, and to explain how and why it is that the uterus becomes affected with inflammation. Facts incontrovertibly appear to show that instead of beginning with a description of inflammation of the uterus as the starting-point in uterine pathology, we have to begin with certain alterations of the uterus which very commonly, nay, almost constantly, cause this inflammation, viz., those alterations in the form of the uterus which are now spoken of as flexions. The whole truth is not expressed by the foregoing statement, but the views I shall proceed to develop more at length may be concisely stated as follows:—

a. Patients suffering from symptoms of uterine inflammation (or, more properly, from symptoms referable to the uterus), are almost universally found to be affected with flexion or alterations in the shape of the uterus of easily recognised character, but varying in degree.

b. The change in the form and shape of the uterus is frequently brought about in consequence of the tissues of the uterus being previously in a state of unusual softness, or what may be often correctly designated as chronic inflammation.

c. The flexion once produced is not only liable to perpetuate itself, so to speak, but continues to act incessantly as the cause of the chronic inflammation present.

Logically, and indeed practically, there are good reasons for placing flexions first in the order of sequence. Admitting the powerful predisposition to flexion produced by a soft condition of the uterus, that softness is not always of the nature of inflammation, for flexion not uncommonly, as after parturition, may be brought about by over-straining, the uterus being simply softer and larger than usual. And again, accidents or over-exertions frequently give rise to flexions in the non-gravid state, without any decided evidence of previous uterine inflammation. These

statements are made in this particular place in order that misconception may not prevail as to the precise nature of the end and aim of the pathology of the uterus which I now seek to develop in detail.

In the next place it is to be remarked, that it is not intended to be inferred that all uterine pathology involves is a study of flexions, their relations to inflammation, and *vice versâ*. The uterus is liable to other pathological processes, having no relation of a tangible character either to flexion or to inflammation. It is liable to cancer, to fibroid tumours, to growths of various kinds, to displacements, &c., &c. It must not be imagined that these latter conditions are unimportant, and nothing here said is to be so construed. But regarding the large majority of actual cases, it is nevertheless true that these flexions, and consequent inflammations, have a very preponderating importance.

Naturally, evidence will be required to be produced for the purpose of sustaining views on the subject of uterine pathology so entirely opposed to those which have hitherto received professional support. Such evidence I propose now to give in the shape of the results of careful investigation extending over a considerable period at University College Hospital. During a period of a little over four years, about 1,200 women applied for relief in my department of the hospital, and an account of the various ailments with which they were found to be affected is here subjoined. In this place I propose to give only a summary of the statistics of these cases, but the cases themselves will be found analysed and commented upon under various headings in other portions of this work.

STATISTICS OF DISEASES OF WOMEN AT UNIVERSITY COLLEGE HOSPITAL, FROM AUGUST, 1865, TO DECEMBER, 1869.

The following is a *résumé* of my observations on the subject of Diseases of Women at University College Hospital, during a period of a little more than four years.

The observations in question include facts observed in the out-patient room and in the ward appropriated to Diseases of Women. It may be stated that my practice was, during the time included in the observations, to see out-patients twice a week, those patients whose cases demanded more attention being transferred to the ward. The ward contained six beds.

The *whole* of the practice in the department of Diseases of

Women during the four years is included in the statistics given, in order that the numerical preponderance and importance of the various ailments might be made more evident. Some few only of the prescription papers, containing also accounts of the diagnosis, &c., have been lost, perhaps 10 or 20 in number in the four years, probably not more.

For the accuracy of the facts stated, I am personally and individually responsible. The diagnosis was, with a few and trifling exceptions, made by myself. And when there was any doubt as to the nature of the diagnosis, the case was put down in the category of 'doubtful' cases.

For the purposes of this analysis, I have only included in the following statistical account my 'hospital' cases. It would have added weight to the reasoning which I have based on my experience had I included 'private' cases. But records of hospital cases are particularly valuable, as less open to objections as to their validity and accuracy.

Respecting the system of classification of the cases here adopted, one or two preliminary remarks are needed. Nomenclature should, of course, represent the scientific view of disease, whether applied to the diseases of the uterus or of other organs. Each particular case might be classified under two or more heads, but in almost every case there is a 'primary' element, which it is the business of the physician to discover, and the diagnosis cannot be said to be complete until the relation between the primary and the secondary elements in the particular case has been scientifically determined.

The statistical account here given is an attempt to represent the predominating or primary element in each case. The analysis of each case has been pushed as far as possible. The result is, to give evidence of the preponderance of the 'mechanical' element in the explanation of a very large proportion of those cases presenting what may be conveniently termed 'uterine' symptoms. Thus, for instance, comparatively few cases are put down as cases of 'menorrhagia,' for the reason that in so many of such cases this symptom was traced to the existence of marked alteration in the form of the uterus. So, again, with respect to 'leucorrhœa,' the same fact holds good. 'Chronic inflammation of the uterus,' pure and simple, finds a very limited representation in these statistics, not because it was very rare, but because it was so frequently found to be traceable and dependent on alterations in the shape of the uterus. If these observations are worth anything, they should go

far, even with those who maintain the extreme of the opposite view, to attract attention to the great frequency of the concurrence of the two lesions—the inflammation and the mechanical alteration in shape.

Further, it must be remarked that a distinction is carefully drawn in the following account between cases 'examined' and cases for various reasons not submitted to an examination. In the latter cases the diagnosis is necessarily a more general one, and the diagnosis set down is descriptive, for the most part only, of the prominent *symptom* present.

Total Number of Cases, 1,205.

Diseases, &c.	Number of cases.	Remarks
Absence or defective development of the uterus, &c.	6	
Amenorrhœa, various degrees of	29	Examined, 5; not examined, 24. Further, many cases of amenorrhœa under head of 'Flexions.'
Vicarious menstruation	4	
Menorrhagia	34	Examined, 7 cases, mostly presenting evidences of chronic uterine inflammation or congestion. Not examined, 27 cases. In addition to these, a very considerable number of cases of menorrhagia under head of 'Flexions.'
Peri-uterine hæmatocele	11	
Dysmenorrhœa	7	Of most of these cases account imperfect. The large proportion of cases of dysmenorrhœa to be found under head of 'Flexions.'
Flexions and versions of the uterus—total, 296 cases:—		
Anteflexion or anteversion	184	Of these 184 cases, 46 were treated as in-patients, one of the chief symptoms being dysmenorrhœa. All examined.
Retroflexion	112	A few of these treated as in-patients.
Prolapsus of the uterus, vagina, &c.	81	
Leucorrhœa (excluding syphilis, and gonorrhœa)	37	Examined, 12 cases, in 8 of which evidences of chronic uterine inflammation. Not examined, 25 cases. In most of the flexion cases leucorrhœa was present.
Hypertrophy of cervix uteri	18	
Fibroid tumours and polypi	96	Fibroid tumours, 72 cases; polypi, 13 cases.
Climacteric disorders	9	Of these 2 examined; 7 not examined.
Carcinoma of uterus, vagina, &c.	54	Of these cases 10 are set down as diagnosis 'doubtful.'
Pelvic cellulitis and abscess	32	
Pregnancy	60	In these 60 cases the supposed 'malady' was found on examination to be 'pregnancy.'
Ailments or discomforts associated with pregnancy	39	
Total	813	

Total Number of Cases, 1,205.—Continued.

Diseases, &c.	Number of cases.	Remarks.
Brought forward . .	813	
Miscarriages, retention in utero of portions of ovum, &c.	27	
Over-lactation . . .	29	
Debility post-partum . .	51	In many of these cases the ailment was 'want of proper food.'
Puerperal mania . . .	2	
Phlegmasia dolens . . .	11	
Diseases of external generative organs.	17	Including inflammation or abscess of vulva . . . . . 7 Varix of vulva . . . . . 2 Cyst of vulva . . . . . 1 Hypertrophy of nymphæ . . . 1 Pruritus vulvæ 6
Vascular tumour of meatus urinarius	9	
Cystitis, and disorders of micturition	15	
Ovaries, tumours of . . .	9	
„ inflammations, &c., of	10	
Breasts: disordered lactation, &c.	13	
Syphilis and gonorrhœa . .	96	
Miscellaneous . . .	12	
General debility . . .	12	In these cases no special sign of uterine disease present.
Diagnosis doubtful, either not noted, or not sufficiently exact, or examination refused	48	
Diseases of other than the generative organs . .	31	Included in this series are 16 cases in which the rectum was affected, the patient presenting, as a consequence, quasi-uterine symptoms.
Total	1,205	

From the foregoing tabular statement we get the following results:—

Excluding all the cases after the heading 'Pelvic cellulitis,' it will be found that there are 714 cases of 'diseases of the uterus,' the other cases being diseases of the external generative organs, various conditions connected with the immediate or very recent presence of pregnancy, some few of the ovaries, breasts, &c. We have, then, 714 cases to analyse in which the patient presented 'uterine' symptoms.

Of these 714 cases the diagnosis was verified by physical examination in 624 cases, while in 90 no examination was made.

The 624 cases in which an examination was made constitute the series to which particular attention must be directed, inasmuch as the symptoms were more *severe*, and inasmuch as the diagnosis is rendered precise by the examination.

These 624 cases may be divided into two series:

a. Those in which the shape of the uterus was materially altered, or its position markedly changed.

b. Those in which the disorder was some other than a change of shape or position.

Category *a* includes 377 cases, viz.,

Flexions . .	296	Retroflexion . .	112	296	Total . . 397
		Anteflexion . .	184		
Prolapsus				81	

Category *b* includes 247 cases:—

General diseases.	Absence or congenital defective formation of uterus	6	Total . . 65
	Amenorrhœa and vicarious menstruation .	9	
	Menorrhagia	7	
	Peri-uterine hæmatocele	11	
	Leucorrhœa	12	
	Hypertrophy of cervix uteri . . .	18	
	Climacteric disorders	2	
Organic, &c.	Fibroid tumours and polypi . . .	96	Total . . 182
	Cancer	54	
	Pelvic cellulitis	32	
		Grand total .	. 624

Thus it will be seen that if we put on one side the organic affections of the uterus, such as cancer, fibroid tumours, and pelvic cellulitis, each of which is represented by high numbers, the residue of cases in which no flexion was found, the patient presenting uterine symptoms, is very trifling indeed. Further, it must be recollected that in 90 other cases presenting uterine symptoms, no examination was made, and in many of them it is pretty certain, judging from the nature of the symptoms, that flexions existed.

The percentage of cases in which evidences of chronic inflammation of the uterus, unattended with flexion, existed, is extremely small. The flexion cases were very generally attended with alterations, such as would be properly termed as of a chronic inflammatory character, but it is precisely in those cases where the symptoms of irritation or inflammation were most marked that severe and well-established flexions were found to exist. The inference seems irresistible, that the alteration in shape was the principal and the really important feature of such cases.

The part which the OVARIES play in the female economy, and the importance of the affections to which these organs are liable,

is also a matter concerning which opinions have considerably varied. In the foregoing list of disorders found to be present in the cases tabulated, the disorders of the ovaries are not numerous. It is certain that many of the cases which I have put down as cases of diseases of the uterus would be claimed by some eminent authorities as affections of the ovaries. The arguments referring to this part of the question, viz., the frequency and importance *per se* of ovarian inflammation, &c., will be found in succeeding chapters.

CHAPTER II.

NATURAL HISTORY OF THE UTERUS AND OVARIES.

NATURAL HISTORY OF THE UTERUS.—Effects of Menstruation—Pregnancy—Sexual Intercourse.

OVARIES: PHENOMENA OF MENSTRUATION AND OVULATION.—Vascular and Erectile Apparatus of Female Sexual Organs: Bulb of the Vagina: Bulb of the Ovary—Mechanism of Ovulation—Rouget's Researches—Menstruation—Source of the Blood—Phenomena observed—Age, Periodicity, Duration, Quantity and Quality of the Discharge.

NATURAL HISTORY OF THE UTERUS.

THE uterus is an organ which has an extremely important position in the female economy, and the changes and modifications witnessed in its shape, size, and texture, in its vascular condition, and in its relations to the nervous centres, exercise a profound influence on the individual who is the subject of them. They produce discomfort of various kinds, they interfere with the natural performance of important functions, prevent the procreation of children, and involve many other minor inconveniences; not infrequently they predispose to the occurrence of other disorders capable of shortening life or bringing it to a sudden and abrupt conclusion.

Life in the woman is made up of three periods: 1. The period preceding that of sexual activity; 2. The period of sexual activity; 3. The period following the cessation of sexual activity. The peculiarities appertaining to these three several periods appear to be almost wholly dependent on, and subordinate to, the condition of the sexual organs at the several periods in question. The sexual organs consist essentially of the uterus and the ovaries, the due exercise of the sexual functions being dependent on the presence of these two organs in their integrity. In the exercise of the sexual functions the ovary is the more essential organ of the two: physiological reasoning conclusively indicates this. It may be that alterations in the ovaries, imperceptible perhaps to us as observers, influence the economy at large in a profound manner; but what we know at present rather justifies

the belief that, in cases where the disorder is dependent on the sexual organs, the uterus is the particular organ most frequently at fault.

Before puberty has arrived the uterus is small and undeveloped, and has, functionally, no existence. And it is remarkable that, during this period, and whilst it remains in its dormant condition, it is not liable to disease. Disease of the organ only begins to show itself when it begins functionally to live. After the climacteric age has been passed, and uterine life has ceased, we find that the condition of the uterus is one very closely analogous with that which subsists before the arrival of puberty. The uterus becomes atrophied—physiologically dead—and the liability to disease for the most part ceases. Thus, during the first and the third stages of the woman's life, equally, the uterus is an organ lying inactive and almost powerless in the economy. But this is not all. The uterus not only enjoys a life of its own, so to speak, but it has a life or a succession of lives within this. If the woman becomes impregnated, the uterus, previously developed and matured, forthwith starts on a new road of development, becomes remarkably altered and changed, and, after the term of gestation has been completed, relapses into its previous condition; the uterus becomes disintegrated, and its substance almost completely removed. The building up of the gravid uterus is not more wonderful than its subsequent destruction. Successive pregnancies involve each the formation and destruction of the organ; for each pregnancy there is the life and death of an entire uterus.

The uterus has thus a life of its own, distinct from, and in a certain degree disconnected with, that of other organs of the body. And from all these considerations it results that the diseases of the uterus have also peculiarities separating them from diseases of other organs.

In diseases of all organs of the body, wherever situate, we witness for the most part only alterations of natural processes; and the diseases observed in the uterus, in like manner, bear upon them the impress of their locality. It is not intended to imply that pathological processes and conditions, such as are met with in other organs of the body, may not be met with in the uterus. Such may unquestionably be the case: cancer, for instance, attacks the pylorus and the uterus, and the disease is in both positions integrally the same, although the tissues among which it makes its inroads are not of the same kind in the two cases. But it will be conceded, after a very slight amount of considera-

tion of the subject, that the interpretation of the pathological and other changes in the uterus would be difficult by one unacquainted—if we could imagine such a thing possible—with the peculiarities of the structure of the uterus and with the nature of the functions which the uterus is called upon to perform in the economy. And it results from what has been now said that the peculiar structure, the peculiar physiological functions of the uterus, impress upon it pathological conditions, phases, and characteristics, with which we have nothing thoroughly identical, and sometimes not even analogous, in the pathological conditions of the other organs of the body.

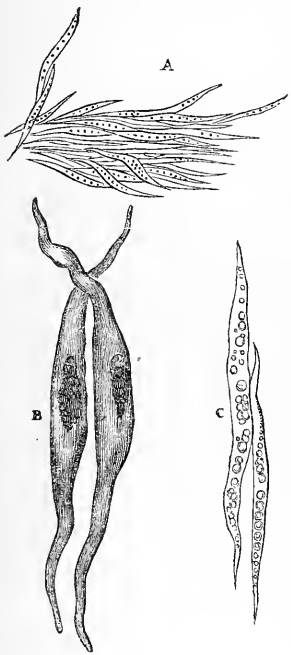
There are two great functions in which the uterus is prominently concerned, and which are most powerful disturbing influences in regard to its textural condition; these are, menstruation and gestation. There is a third in which it is also concerned, viz. the sexual congress, which is also capable, though probably in a less degree, of affecting its textural condition. How, and why, the exercise of these functions respectively affects the physical condition of the organ and leads to disease, must now be pointed out.

Menstruation.—During the whole of sexual life, the uterus is each month the seat of an unusual congestion of all its blood-vessels. Its circulation is more active, it enlarges, the sinuses—which are to be seen on making a section of the uterine walls as cavities of considerable size—become filled with blood, and its tissues engorged and expanded. It will be presently shown (see 'Phenomena of Menstruation') how profusely the organ is supplied with blood-vessels; it is further to be remarked that the veins are unprovided with valves, the result of which is that congestion of the uterine plexuses readily occurs. The menstrual congestion of the uterus lasts for some days even in health, the duration being probably from first to last not less than a week, and where the period is prolonged it may be considerably over a week. Scanzoni estimates the ordinary duration of menstrual congestion indeed as nearly half of the whole four weeks which usually constitutes the 'period.' Prolongation of the menstrual period, or unusual intensity of the congestion for a shorter time, will thus lead in the end to a chronic condition of engorgement; for if the heart be weak, or if other circumstances interfere with the quick removal of the excessive quantity of blood from the organ, the vessels do not recover their proper size, they remain permanently larger than they should be, and as a consequence

the uterus itself acquires a size which is excessive and unnatural.

Thus, under ordinary circumstances the menstrual process tends to produce uterine congestion and enlargement, but when menstruation is disturbed, this congestion is intensified and perpetuated. Scanzoni—whose classical treatise on chronic metritis* appeared almost simultaneously with the first edition of this work—considers sudden suppression of menstruation as one of the most important causes of chronic inflammation of the uterus; for the engorgement of the uterus natural to menstruation becomes, when unrelieved, a true congestion, the blood stagnating in the widely open vessels, and thus leading to other important textural changes. The severe and troublesome headache not uncommonly observed at the outset of the menstrual period, where there is a temporary obstruction to the escape of the blood from the uterus, indicates probably the transference of this congestion from the uterus to the head.

Fig. 1.†



Pregnancy. — The changes in the uterus which are the result of gestation are of a very important character.

The most remarkable change is the increase of the *size* of the organ which is observed under the circumstances; for after the fœtus has been expelled and the uterus has been thoroughly emptied of its contents, its bulk many times exceeds that of the unimpregnated uterus. Under favourable circumstances, as is well known, the size of the uterus rapidly diminishes during the few weeks following parturition, until it finally becomes nearly, but not quite, as small as before the process of gestation commenced. This diminution in the size of the uterus is the result of a peculiar process, by which the very large muscular fibres, whose contractile power has been exercised in expelling the uterine contents, become first

* *Die chronische Metritis*, 4to. Berlin, 1863.

† Fig. 1 represents three conditions of the uterine muscular fibres: A. Fibres from the uterus in the non-gravid state; B. Fibres from the fully developed gravid uterus; and C. Fibres undergoing fatty degeneration after parturition.

affected with fatty degeneration, and then undergo absorption and completely disappear. The vessels of the uterus also become at the same time much reduced in size. The process by virtue of which the uterus returns to its normal condition, is now known as the *process of involution.* The time occupied in involution is probably about two months, the greatest diminution in size occurring during the second week, after which time under ordinary circumstances the enormous muscular fibres characteristic of the pregnant uterus have become disintegrated. Immediately after delivery, the uterus has a thickness of one inch and a length of about eight inches; but by the end of the first month the reduction in size is nearly completely accomplished. The muscular fibres begin to undergo transformation into fatty molecules about four days after labour, and while the metamorphosis is proceeding the uterus is friable and soft. The new tissue of the uterus, which is to replace those which have been absorbed, begins to be evident at the end of four weeks after parturition, and shortly after this we may conclude that the uterus ought to be reconstructed.* During a month and upwards after parturition, the uterus is consequently unduly large and vascular, and it very frequently happens that circumstances interfere with the efficient and timely completion of its involution. If the placenta be not expelled rapidly, and the uterus remains unduly enlarged for a time, this circumstance gives rise to subsequent difficulties, for coagula form in the sinuses of the uterus, and even after expulsion of the placenta these coagula by their bulk interfere with the due contraction of the uterus. Again, if the expulsion of these coagula be deferred, as is not very uncommon, the return of the uterus to its normal size is proportionately interfered with.

Again, when the nutritive changes of the body generally are in a low state, and when the individual is debilitated from any cause, the normal metamorphosis of the uterine tissue is disturbed, the blood circulates less rapidly, the effete material of the uterus is not removed, and the organ continues large, unwieldy, and congested. Defective involution of the uterus may thus be a consequence of various disturbing causes in operation after child-birth, all of which tend to leave the uterus larger than it should be; the new uterus, constructed by growth of new material, and built up

* See Heschl's valuable researches on this subject, *Zeits. der Gesells. der Aertze*: Wien, 1852. Also Dr. Farre, *Cycl. An. and Phys.*, and Dr. Priestley *On the Development of the Gravid Uterus*: Lond. 1860.

in the existing large framework, is also too large and its blood-vessels too full, and this creates a very strong predisposition to the perpetuation of an abnormal nutrition process in the uterus. As will be shown presently, this increased size of the uterus leads to mechanical changes in its position and shape. It is almost unnecessary to mention how very important, in postponing the normal involution process, must be the occurrence of puerperal fever, uterine phlebitis, &c. Abortions are both an effect and a cause of defective involution of the uterus, but quickly repeated pregnancy undoubtedly tends to produce it, and thus to predispose to chronic inflammation, the reason being that before the uterus is thoroughly renovated it is called upon again to undergo the gestation process. Quickly following pregnancies, especially when they occasionally result in abortions, both cause and are caused by a defective involution process.

Sexual Intercourse.—The erection of the uterus described by Rouget and others as occurring during ovulation (see 'Phenomena of Menstruation') occurs also during the act of intercourse. At least this is highly probable. Sexual excesses predispose to chronic congestion of the uterus, inasmuch as they involve too frequently repeated, or too long continued, engorgement of the uterus and other generative organs. In young women recently married it is by no means uncommon to meet with a condition plainly brought about by excess of the kind here alluded to, and but little is required under such circumstances to produce a chronic engorgement of the organ, and the further train of evils usually following in its wake. It appears to be quite certain also, that unnatural excitation of the generative organs in women leads to uterine mischief of various kinds, and promotes and maintains a chronic congestion of the organ and of its vessels, tending to give rise to various secondary disorders.

This brief retrospect of the mechanical results of the performance of the natural functions of the uterus will suffice to show the direction in which we are to look for the explanation of its various morbid conditions. The nutrition-process in the uterus is, as a consequence, very liable to derangement, this derangement resulting in the production of important alterations in the size, consistence, and structural condition of the organ.

OVARIES: NATURAL HISTORY.—PHENOMENA OF MENSTRUATION AND OVULATION.

The importance of the physiology of menstruation and ovulation in the study of the morbid processes witnessed in the female generative organs is obvious.

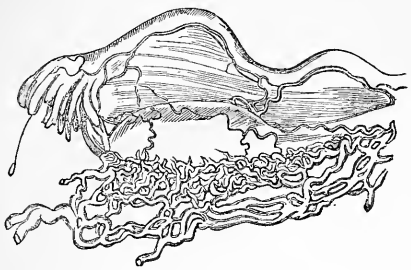
All the generative organs are well supplied with blood. When in a state of rest the generative organs contain but a moderate supply of blood, but under excitement the vascular supply is very largely increased. This increase is effected by the distension of certain structures—erectile organs—which are at other times comparatively empty.

The orifice of the vagina has on each side of it an elongated leech-shaped body, the *bulb* of the *vagina*, composed of a large number of tortuous veins, closely packed together in a fibrous investment, prolonged upwards in the middle line to the glans clitoridis. This is a provision for erection, the blood being detained in the veins by the action of suitable muscles. Further, the vaginal canal is surrounded with a belt of blood-vessels, forming a large plexus of veins. The arrangement of the vessels supplying the uterus is of considerable importance, and Rouget* has particularly investigated this subject in a memoir of great value. The utero-ovarian artery, which supplies the uterus with blood, passes upwards. Its first branches, to the cervix, are small; but opposite the body of the uterus, it gives off suddenly twelve to eighteen short trunks, which pursue at once a spiral direction and divide into a large number of smaller branches. When injected, these vessels are seen to lie so close as to quite cover the sides of the uterus. The body of the uterus thus receives a very profuse arterial supply, and the spiral convolutions of the branches may be seen projecting into the sinuses of the uterine structure. The veins in which these arteries terminate are still more numerous and capacious, and they form a plexus covering the sides of the body of the uterus. Below, these veins end in the pudendal veins, in the middle they end in the uterine veins, and above in the spermatic veins. It results that the sides of the uterus are covered with a layer of considerable thickness, composed of blood-vessels having great capacity, and it is further to be recollected that the tissue of the uterus itself contains large sinuses—receptacles for venous blood.

* *Recherches sur les Organes érectiles de la Femme.* Brown-Séquard's *Journ. de Physiol.* tom. i.

The ovaries are supplied with blood from the utero-ovarian artery and from the spermatic. The arterial trunk passes along near the base of the ovary, and in its passage gives off a series of ten or twelve branches; these branches divide at once, assume a convoluted arrangement, and finally enter the ovary. The veins coming from the ovary form a special bulb, *the bulb of the ovary*, composed like the vaginal bulb of a series of tortuous veins, susceptible of considerable distension. The bulb of the ovary has an elongated form, its length a little exceeding that of the ovary, it is a little flattened, not quite half an inch thick, and a little deeper than this; altogether its size is not much inferior to that of the vaginal bulb. The pampiniform plexus of veins, a further portion of the vascular apparatus here met with, lies below the ovarian bulb in the folds of the broad ligament. The bulb of the ovary is a structure only recently known. The first allusion to it seems to be in a paper communicated by Mr. Traer to the Anatomical Society of Paris. It is well depicted in Dr. Savage's beautifully-illustrated work,* and in Rouget's memoir (*loc. cit.*), it is made the subject of an elaborate investigation conjointly with those of the other erectile structures of the female generative organs (see fig. 2).

Fig. 2.



Certain muscular structures connected with the generative organs must next be considered. In the memoir of Rouget it is shown that the function of ovulation is probably greatly dependent for its efficient performance on the presence of muscular structures not before described in the human subject. Erectility is dependent, as Rouget remarks, on association of structures for reception of a large quantity of blood, and for detention of that blood. The bulb of the vagina is an erectile structure: the muscular apparatus connected with this is well known. And with reference to the bulb of the ovary Rouget endeavours to show that there is a muscular apparatus for the control of its vascular supply, and for constituting it in fact as an erectile organ. In lower animals the ovary is brought into coaptation with the oviduct by a mechanism which is not quite the same, though on the

* *Illustrations of the Surgery of the Female Generative Organs.* London, Churchill, 1863.

same general plan, in different cases. Thus in birds, where we find the muscular apparatus connected with the ovaries very well marked, the oviduct is surrounded by a muscular structure or envelope within which the coils of the oviduct lie. The contractile fibres are so placed that a two-fold effect follows from their contraction, viz. the infundibulum is opened out, and at the same time approximated to the ovary in order to receive the ova. The muscles producing this effect are of the involuntary kind, and radiate after the manner of a fan in the folds of the membrane enclosing the oviduct.

Rouget, after introducing other anatomical facts in reference to the comparative anatomy of the subject, goes on to state that in the human female there are to be found muscular fibres arranged on an analogous plan, that they form a system covering the uterus, ovaries, and appendages; and that the muscular fibres belonging to this system pass from the lumbar region to the ovary and to the fimbriæ near it, while others pass from the uterus over the ovary, and onwards to the fimbriæ of the Fallopian tube also, and that the simultaneous contraction of these two sets of fibres has necessarily the effect of bringing the fimbriæ near the ovary. The mechanism of the process is, he contends, identical in the case of the human subject and in animals lower in the scale.

Thus, then, the muscular fibres described, together with the vascular apparatus of the uterus and ovary, constitute together, if we follow Rouget, the erectile structure of the internal generative organs. Ovulation is accompanied by the following phenomena: the Graafian follicles being mature, or nearly so, the muscular fibres above described are set in action and the fimbriæ of the tube are thus made to grasp the ovary, at the same time that they induce and maintain a condition of erection of the ovarian bulb. This spasmodic erection is present so long as the ovary and the Fallopian tube remain in contact, and when the rupture of the Graafian follicle happens, the ovum passes into the proper channel. Ordinarily the ovipont occurs, because of the presence of ripe ova in the ovary; and with this process it is almost generally admitted the phenomena of *menstruation* are associated; but it is probable that the act of congress often determines an ovipont, which without it would be postponed for a time. Here the act of intercourse induces erection of the external generative organs, and doubtless also that erection of the internal organs above alluded to, the result being escape of an ovule. Rouget

contends that the uterus is equally with the ovary an erectile organ, that its erection occurs simultaneously with that of the ovary, and that the final result of this erection, during which the uterus is kept gorged with blood, is exudation of that sanguineous fluid from the surface of its lining membrane, forming the menstrual discharge.

The action of the muscular apparatus in bringing the ovary to the open end of the Fallopian tube is probably greatly assisted by the engorgement of the ovary and of its bulb, for when the pelvic vessels are injected artificially after death, the effect is to bring the ovary close to the open mouth of the Fallopian tube; and it has indeed been assumed by some that the injection of the ovarian bulb is a principal agent in effecting the adjustment necessary for the ovipont.

We thus see, in the vascular and muscular structures of the internal generative organs, provision made for the supply of vast quantities of blood to these organs. In the human female the engorgement and full distension of the vessels occurs periodically, the period of engorgement being that of menstruation; while it would appear that it is liable—during the sexual life at least—to occur also during intercourse. We may in the next place consider briefly certain of the other phenomena of menstruation.

The process known under the names 'menstruation,' the 'catamenial discharge,' &c., is one for the production of which two organs are essential—the uterus and the ovary. Menstruation is an indication of the fact that the ovaries are in activity—in other words, that ova are being formed, developed, and maturated in the ovaries. By 'menstruation' is meant a periodical discharge of a sanguineous fluid from the uterus, this discharge being attended, as already remarked, with an engorged or congested state of the uterus, ovaries, and adjacent organs, in most cases by hyperæsthesia of the parts in question, and by disturbances, of various kinds and degrees, of other functions of the body. It is, in a certain sense, analogous to the *œstrus* in the lower animals, the presence of menstruation being an indication that the woman is capable of being impregnated; but the woman differs from these animals in this respect, that she is capable of being impregnated, not at the time during which the discharge itself occurs only, but also during the intervals between the periodic discharges. Menstruation is to be regarded as an adjunct of ovulation, resulting probably, as Rouget observes, from that continued congestion of the uterus and vivid injection of its lining membrane with blood

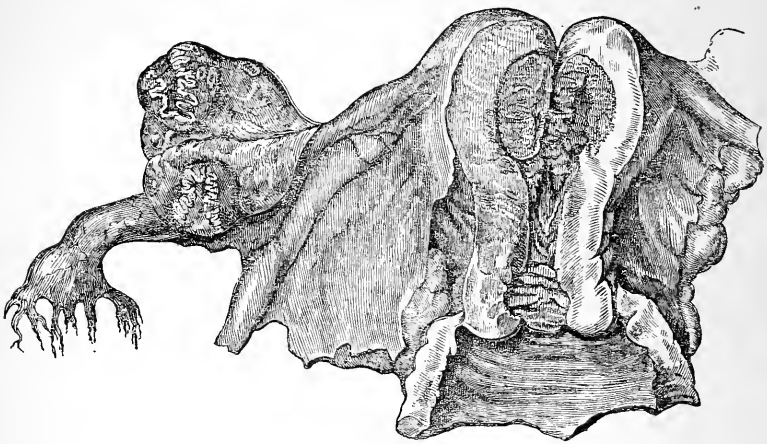
which is associated with ovulation. The actual source of the menstrual blood has been a matter of dispute; but there can be no question that a great part of the fluid, under ordinary circumstances, probably the whole, comes from the uterus itself; and it appears to be poured out from the open mouths of the uterine glands. The mucous membrane lining the body of the uterus, which is

Fig. 3.

ordinarily $\frac{1}{8}$ of an inch thick, is very vascular; during menstruation it becomes much more so, and moreover increases in thickness. I have had opportunities on four or five occasions of examining the uterus during menstruation. In the case of a woman who died while menstruating, after an operation for hernia, I saw the uterus lined by a deeply red, velvety soft structure, on the free surface of which were to be seen the open mouths of the uterine glands (see fig. 3). These glands run from the free to the attached surface in a tortuous manner, and it is uncertain whether they end by blind terminations, or whether they have more deeply a communication with blood-vessels. Fig. 4 represents the condition observed in a young woman who died, while menstruating, from the effects of a burn, in University College Hospital. In other cases I have found the mucous membrane in actual process of disintegration. The mucous membrane thus thickened appears to be shed at each catamenial period. In some cases a regular cast of the uterine cavity is thrown off every month, but this is abnormal; ordinarily it would appear that the mucous membrane is broken up in such a manner as not to be noticed in the discharges. The cavity of the cervix of the uterus does not pour out blood. It is pretty certain that normally the cavity of the body of the

uterus is the main source of the menstrual bleeding, but the Graafian follicles probably contribute not unfrequently to a limited extent, while in some instances of profuse menstruation it is

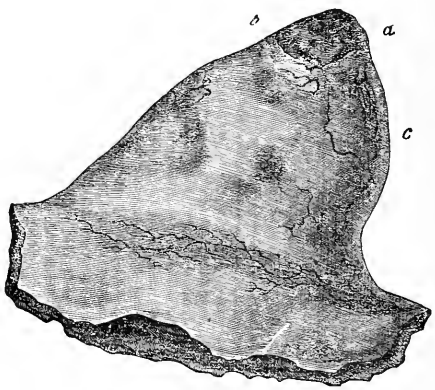
Fig. 4.



probable that a good deal of blood finds its way from the ovary into the uterus, and so externally.

The changes in the ovary coincident with menstruation may

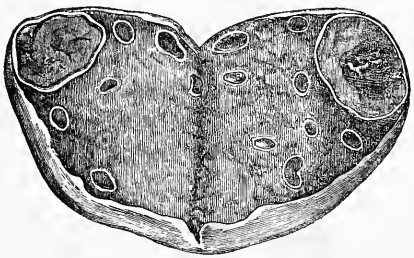
Fig. 5.



next be alluded to. Supposing matters take their ordinary course, the ovary produces on its surface, and periodically, matured Graafian follicles one or more at a time, causing the ovary to present an elevation the size of a nut-kernel, and constituted by

the follicle distended with blood and containing the ovule. This condition of the follicle is present at the time menstruation occurs. The next event is the rupture of this follicle and passage of its contents into the Fallopian tube—the ovipont—provided for in the manner already described. Fig. 5 (from Dr. Farre) shows a Graafian follicle preparing for rupture; fig. 6 a section of the same follicle, exhibiting its cavity and a blood clot within. Rupture of one or more follicles probably occurs at, or shortly after, each menstruation, though not limited absolutely to that period. After the follicles have discharged their contents, the cavity of the follicle and the interior of the Fallopian tube may or may not remain in connection with each other: if further bleeding from

Fig. 6.



the interior of the follicle occurs, the blood will or will not find its way into the uterus according to circumstances. It is obvious that the continuous application of the Fallopian tubes to the ovary is expedient during the whole time follicles are liable to become ruptured, or there might be escape of the follicular contents into the peritoneal cavity. Such escape and consequent failure of the ovipont is not very uncommon, leading to sterility, to extra-uterine fœtation, to effusion of blood into the peritoneal cavity, and other disorders. The Graafian follicle, having discharged its contents, the blood within it ordinarily coagulates, the cavity shrinks up, and by the successive growth of follicles lying deeper in the ovarian stroma, the used-up follicle sinks back towards the middle of the ovary, becomes smaller and smaller, and disappears at the end of three or four months. The retrogression of the follicle is marked also by changes of colour due chiefly to the transformation the blood-clot undergoes, and to the changes in the very vascular lining of the follicle. After bursting, the follicle is known as a *false corpus luteum*.

From what has been stated it will be gathered that ovulation

and menstruation are in a peculiar relation to each other. Ovulation does not actually produce menstruation, although the production of ova is in another sense of the word the first in the chain of events: menstruation does not occur in the absence of the ovaries. Ovulation may occur without menstruation; in some very rare cases ovulation is always unassociated with menstruation.*

The commencement of the process of menstruation is usually preceded by certain changes in the outward conformation and appearance. The general signs of the arrival of puberty in the woman are thus eloquently enumerated by Brierre de Boismont: 'L'époque de la puberté est enfin arrivée. Une révolution immense s'opère dans l'organisation de la jeune fille. A ses formes grêles et allongées ont succédé des contours pleins et gracieux. Sa démarche, incertaine et languissante, devient ferme et animée. Le doux éclat de ses yeux révèle le feu dont elle est pénétrée. Des changements non moins remarquables ont lieu dans l'économie. . . . La poitrine, étroite et resserrée, s'agrandit et s'évase. Les poumons respirent plus à l'aise; le cœur, plus développé, lance avec force le sang dans les innombrables vaisseaux du système circulatoire. Le tissu cellulaire apparaît à son tour pour former des courbes admirables qui constituent la beauté de la femme. De tous les organes qui ressentent l'influence de la puberté, l'utérus et ses annexes sont ceux où elle est le plus prononcée. Réduits à un petit volume, la matrice, les ovaires, les trompes, et les seins prennent un accroissement considérable. Les os, les muscles participent à ce développement général. Le moral lui-même offre des différences non moins tranchées. La jeune fille, jusqu'alors véritablement enfant dans ses goûts, ses inclinations, ses penchants, éprouve une complète métamorphose; inquiète et rêveuse, elle ne sait à quoi attribuer les sentiments nouveaux qui l'agitent; tous les sens sont en éveil; une douce chaleur la pénètre; un prurit inaccoutumé se fixe aux organes de la génération; le plus important phénomène de la puberté, son complément indispensable, celui qui transforme la jeune fille en femme, la première éruption des règles, se manifeste.'†

There are also sometimes present in young women who are

* For further information on the subjects here discussed, see Ronget's Essay, already referred to, the works of Coste, Farre (in *Cycl. Anat. and Phys.*), Tyler Smith, and others.

† *De la Menstruation dans ses rapports physiologiques et pathologiques*, 8vo. Paris, 1842, p. 1.

about to menstruate shortly certain sensations, more or less marked in different cases, and most intense in those cases where the appearance of the menstrual discharge is a little delayed. These symptoms are known by the term *molimina menstruationis*. The chief symptoms of the menstrual molimen—the attempt at menstruation, the evidence of ovarian activity—are as follows: A sensation of weight and fulness in the pelvis and its neighbourhood, together with a 'bearing down' or dragging sensation; pains radiating from the loins downwards towards the perinæum, and occasionally extending down the thighs; tenderness over the hypogastric and inguinal regions; a feeling of heat in these regions so intense as to be described 'as burning' by some patients. Irritability of the bladder, frequency of micturition, and inability to evacuate the bladder, are more rarely observed. The digestive system sympathising, there are diarrhœa, or constipation, sickness, inappetency. Fretfulness, or change of temper and disposition, may also be noticed; in short, many of those symptoms usually classed under the denomination 'hysterical' may be present. The local symptoms are the most constant. When symptoms of the above character are observed at intervals of three or four weeks, persisting in each periodic recurrence for two, three, or four days together, in a young woman who presents outward signs of having arrived at puberty, they are evidence of the existence of ovarian action, and constitute the menstrual molimen. The characteristic point about these symptoms is their periodicity.

In some cases where menstruation is absent there is witnessed a periodically occurring hæmorrhage or exudation of blood from some other mucous surface, as from the lungs, stomach, surface of an ulcer situated on some part of the cutaneous surface, from beneath the toe nails, from the conjunctiva, &c. In such cases there is said to be *vicarious menstruation*.

The *age* during which the catamenial discharge occurs is open to certain variations; but, as a rule, it begins between the ages of 14 and 16, and ceases between the ages of 40 and 50. For about thirty years of the woman's life this discharge is periodically observed. With reference to the age at which it commences, we have observations by Roberton,* Whitehead,† Brierre de Boismont,‡ and

* *Observations and Notes on the Physiology and Diseases of Women, and on Practical Midwifery*, 8vo. 1851.

† *On the Causes and Treatment of Abortion and Sterility*, 8vo. 1847.

‡ *Op. cit.*

more recently by Szukits.* In 358 cases observed by myself, menstruation occurred for the first time

At the age of	10 in	3 cases	
,, ,,	11 ,,	12	,,
,, ,,	12 ,,	29	,,
,, ,,	13 ,,	43	,,
,, ,,	14 ,,	73	,,
,, ,,	15 ,,	62	,,
,, ,,	16 ,,	61	,,
,, ,,	17 ,,	33	,,
At the age of	18 in	23 cases	
,, ,,	19 ,,	10	,,
,, ,,	20 ,,	6	,,
,, ,,	21 ,,	2	,,
,, ,,	24 ,,	1	,,
Total .	.	358	

Statistics of 2,696 cases at University College Hospital obtained from women who applied at this hospital to be attended in their confinements, and collected for me by Mr. Walter Rigden, are as follows:—

Of the 2,696 cases, menstruation occurred for the first time

At the age of	9 in	3 cases	
,, ,,	10 ,,	14	,,
,, ,,	11 ,,	60	,,
,, ,,	12 ,,	170	,,
,, ,,	13 ,,	353	,,
,, ,,	14 ,,	560	,,
,, ,,	15 ,,	510	,,
,, ,,	16 ,,	455	,,
,, ,,	17 ,,	272	,,
At the age of	18 in	150 cases	
,, ,,	19 ,,	76	,,
,, ,,	20 ,,	29	,,
,, ,,	21 ,,	7	,,
,, ,,	22 ,,	3	,,
,, ,,	23 ,,	2	,,
,, ,,	24 ,,	0	,,
,, ,,	25 ,,	0	,,
,, ,,	26 ,,	2	,,

The mean age is 14·96, about. The greater number of these cases were hospital out-patients.

The mean age in 4,000 cases referred to by Whitehead was 15 years $6\frac{3}{4}$ months. In 2,169 cases collected by Roberton, Lee, and Murphy, the mean age was 14 years 11 months. Szukits found the mean age to be, in 665 women born in Vienna, 15 years $8\frac{1}{2}$ months; and in 1,610 women born in the country, 16 years $2\frac{1}{2}$ months, which result, as regards the influence of town life in hastening the first appearance of the catamenia, agrees with that arrived at by Brierre de Boismont in Paris. The latter observer states that, amongst women belonging to the upper classes of society, the average age of commencement was as early as 13 years 8 months. Although the age 14–16 is the most common, yet there are numerous exceptions to this rule. In Roberton's 450 cases, ten began to menstruate as early as 11 years old, and nineteen at 12. The youngest of Szukits' cases was, in the town class

* See an abstract of his observations in Schmidt's *Jahrb.* bd. xcvii. p. 331.

11 years and in the country class 10 years old. In three out of 358 cases noted by myself, menstruation began at the age of 10 years, and although the largest number of my own cases—73 out of 358—menstruated first at the age of 14, a very considerable number menstruated first as late as the age of 18.

The mean age of the commencement of the catamenia appears to be about two years earlier in the warmer than in the more temperate climates. Thus in India the mean age in 597 cases collected by Roberton was 13 years. It was formerly supposed, on the assertions of Montesquieu and Haller, that Hindu women begin to menstruate, as a rule, at 8, 9, and 10 years of age; but the facts collected by Roberton conclusively show the incorrectness of this opinion. It does appear, however, from Roberton's tables, that the 'proportion of Hindus who arrive at puberty at the ages of 12, 13, and 14,' is far greater than is observed in the women living in our own temperate country. This early arrival of the catamenia is attributed by Roberton to the influence of race —to the circumstance that for many generations (upwards of three thousand years) it has been the custom of this people to give their daughters in marriage immediately on the arrival of puberty. This custom has, in Roberton's opinion, produced and perpetuated a kind of 'family peculiarity.' Montesquieu and Haller held that 'climate' is the determining cause of this difference. More recent statistics are in the same direction. Thus Vogt's researches show that in Norway the average first appearance is the age of 16·12. We may contrast this with the average at University College Hospital of 14·96. Toulin and Lagneau have collected observations on cases in various latitudes presented to the International Medical Congress at Paris in 1867,* the general conclusions from which are in confirmation of the fact of the earlier appearance of menstruation in hot climates. And it would appear that climate is really the determining element in the difference observed, between extremely hot and extremely cold countries, a difference represented by from three to four years.

The *latest age* at which the catamenia may commence is open to great variations; but, as a rule, it is not postponed beyond the age of 18. Brierre de Boismont found that, out of 352 'femmes de la capitale,' twenty began to menstruate at 18 years, six at 19, five at 20, two at 21, four at 22, and two at the age of 23. The

* New Syd. Soc., *Bien. Retrosp.* for 1867–8, p. 377.

latest age given by Roberton is also 23. Szukits gives the age of 22 as the latest at which the first appearance occurred in the Vienna class; but of those from the country one woman began to menstruate as late as 25. The latest age in my own series was 24. In a case quoted by Meissner, the catamenia first appeared at the age of 42.*

The cessation of menstruation occurs in the majority of cases between the ages of 40 and 50. The number of cases in which the cessation takes place before 40 is greater than the number of those in which the final appearance of the catamenia occurs after the age of 50. (Brierre de Boismont.) There appears, however, to be a great diversity in the results obtained by various observers on this point. Thus, in the cases, 181 in number, of the author just quoted, the age at which the final cessation most frequently (18 out of 181) occurred, was 40; while in Roberton's cases it was most frequently observed (in 26 out of 77 cases) at the age of 50; in the majority of the cases observed by Szukits at 46–50. The earliest period at which the cessation may take place is shown by the following recorded facts: Of Brierre de Boismont's 181 cases, the cessation was noticed in seven before the age of 30, the earliest being at the age of 21. The earliest cessation in Roberton's 77 cases was at the age of 35. Szukits gives two cases at the age of 30.

The following table shows the results of my observations in 55 cases :—

Menstruation ceased	Menstruation ceased
At the age of 30 in 1 case	At the age of 46 in 2 cases
„ „ 33 „ 1 „	„ „ 47 „ 4
„ „ 34 „ 2 „	„ „ 48 „ 5 „
„ „ 35 „ 1 „	„ „ 49 „ 4 „ and 1 still menstruating at that age
„ „ 37 „ 1 „	
„ „ 38 „ 3 „	„ „ 50 „ 4 „
„ „ 39 „ 1 „	„ „ 51 „ 3 „
„ „ 40 „ 2 „	„ „ 53 „ 1 „ and 1 still menstruating at that age
„ „ 41 „ 2 „	
„ „ 43 „ 8 „	—
„ „ 44 „ 2 „	Total . 55
„ „ 45 „ 6 „	

Perhaps the most interesting class of facts in connection with this subject has reference to the latest age at which menstruation may occur. There is very little doubt that some of the cases related as cases of late menstruation are not cases of menstruation

* Meissner, *Frauenzimmerkrankheiten*, ii. 741.

proper at all; but it must be allowed that occasionally a discharge, sanguineous and periodic, may be present at a very late age. Gardien relates the case of a woman said to have been 'parfaitement réglée' at the age of 75. Up to the age of 55 there are a sufficiently large number of cases; but after that age true menstruation is exceedingly rare. Brierre de Boismont gives five after the age of 55, out of 181, one being as late as 60. Roberton (*op. cit.* p. 185) gives four out of 79, as occurring after 55, two of which were at the age of 60, and one as late as 70. Lastly, Szukits gives one case (his latest) at the age of 60.

Some, apparently well authenticated, cases of menstruation at very advanced ages, viz. at 91, 80, 87, 59, and 70 years of age, are related in the work of the late Dr. D. D. Davis.*

In reference to the foregoing statements, it is probable that many of the apparent exceptions to general rules quoted were cases in which pathological elements were more or less intermixed.

Menstruation ceases earlier in India; but everywhere the duration in years is much the same. For about thirty years menstruation continues. Roberton is of opinion that early cessation is chiefly noticed in those cases in which the function has been established at an early period. In most of those cases, however, in which the function continues to be exercised up to the age of 53 or 54, the period of commencement has not been unusually late; in such cases, the menstrual life far exceeds the average of thirty years.

Dr. Beigel,† the able editor and translator of the German edition of this work, gives this observation on 500 cases: of 126 cases where menstruation had ceased, there were 9 cases of late menstruation.

Menstruation ceased at 51 in 1 case	Menstruation ceased at 65 in 1 case
„ „ „ 52 „ 2 „	„ „ „ 72 „ 1 „
„ „ „ 53 „ 1 „	
„ „ „ 54 „ 1 „	Total . . 9
„ „ „ 55 „ 2 „	

Periodicity.—The usually accepted statement is that the time included between the day of the appearance of the discharge and the corresponding subsequent day is twenty-eight days—a lunar month; but the difference presented by individual cases in this respect is so great as to show that any rule generally applicable must have rather a wide range. Many women menstruate regu-

* *Principles and Practice of Obstetric Medicine*, vol. i. p. 239.

† German edition of this work (Enke, Erlangen), p. 245.

larly every three weeks; and a less number menstruate every calendar month, or a little over. In another class of women there is great irregularity, the period varying from time to time consistently with health. It is only, then, in the majority of instances that menstruation occurs every lunar month. There is often evidence that peculiarities in respect to the menstrual period are transmitted from one generation to another.

Number of Days during which the Discharge continues.—In 562 cases examined by Brierre de Boismont, the discharge continued 8 days in 172 individuals; the number of days next frequently observed was 3; the next 4. The conclusion arrived at by this author was that the menstrual flow continues longer in towns than in the country; and longer in small, nervous, delicate women, than in those who are tall, robust, and of a sanguine temperament; longer also in those who lead a sedentary, easy, voluptuous life than in those who follow active occupations, whose diet is conducive to health, and whose manners are regular.* In women who are beginning to menstruate, the discharge lasts generally a short time for the first few months, its duration increasing subsequently. The time during which the discharge continues is, in general terms, three to seven or eight days; but the observer must be prepared to meet with great variations in this particular.

Quantity.—Late observers (Magendie excepted) consider the typical quantity of sanguineous fluid which is lost at each period to be three to four ounces, or even less than this.† The older estimates considerably exceed this in amount. The quantity appears to be greatest about the middle of the period in the majority of cases. Sudden cessation for some hours together, followed by copious discharges, whether accompanied by coagula or not, is abnormal; for when there is no impediment the flow continues persistently and uninterruptedly, though it may be more in quantity at one time of the day than another.

Quality of the Fluid discharged.—The researches of Dr. Whitehead, Donné, and others, have conclusively shown that the discharge observed is really composed of blood; and that when obtained immediately from the uterus, and before it has been subjected to the action of the acid mucus of the vagina, it is coagulable just as is ordinary blood. As an illustration of this fact we find that, when the menstrual flow is excessive, clots are

* *Op cit.*, p. 142.

† Farre, *loc. cit.* p. 663.

not unfrequently discharged. Ordinarily, as it flows from the vulva, it has acquired an acid reaction, and is no longer coagulable. For the first few hours the discharge is paler, it then becomes of a deeper red, and again appears of a lighter colour as it is about to disappear. The odour of the menstrual secretion is peculiar; formerly extraordinary effects were attributed to it, which it is unnecessary to enumerate here. The varying qualities of the vaginal and cervical secretions have probably more influence in altering the qualities of the menstrual fluid than any varieties of the fluid itself as it exudes from the uterus.

CHAPTER III.

PATHOLOGICAL CHANGES IN THE UTERUS: GENERAL PRINCIPLES OF TREATMENT.

Pathological Changes in the Uterus.—(1) Congestion—Mechanism of its Occurrence—Relation of Flexions to Congestion—'Strangulation' of the Uterus—General Causes of Congestion—(2) Increase in Bulk—'Chronic Inflammation': the term usually employed to describe it—(3) Changes in the Shape of the Uterus—The great Importance of these Changes—Relation of these Changes (Flexions) to other Pathological Processes—(4) Changes in the Lining Membranes of the Uterus and Cervix—The 'Endometritis' Theory of Uterine Disease discussed—Shown to be generally due to Retention of Secretion, due to Obstruction at outlet—(5) Changes in the Position of the Uterus—(6) Acute Inflammation of the Uterus; Idiopathic, Traumatic—Latter generally of Pyæmic Nature.

Treatment.—Treatment of Acute Inflammation—Treatment of Chronic Congestion, &c.—Preventive and Curative—General Measures—Local Treatment of the Uterus—Internal Remedies—Blood-letting—Resort to various Spas—Topical Remedies—Cold Affusions, Caustics, &c.

The question before us is the nature and causes of the pathological changes in the uterus recognisable by the touch, the sight, and other methods of investigation.

The question is, *firstly*, one of fact; for it has been warmly debated whether this, that, or other changes in the uterus are frequent or rare. For this reason I have in the remarks and statements set forth in Chapter I. indicated the nature of the 'facts' as they have presented themselves to me.

The question is, *secondly*, one of theory; certain facts being admitted, conclusions may be drawn from them of a conflicting character.

Thus, it may be stated that flexions of the uterus are rare, or the opposite, viz., that they are very common. This is a question of fact.

Again, it may be stated that flexions are frequently associated with chronic inflammation of the uterus. Of those who admit this proposition, some will argue that the flexion is the cause or forerunner of the inflammation; others, that the inflammation is the cause of the flexion. This is a matter of opinion, and the discussion of the question has a great practical importance.

The various pathological alterations in the uterus are important in various degrees. Those are obviously the most important which affect existence and tend shortly to produce death. Pyæmia starting from the uterus and cancer of the uterus come under this category, but they are comparatively rare. Other and more common pathological changes in the uterus are productive rather of discomfort than (necessarily) danger to life, and their importance is measured by the degree of discomfort and disturbance of function they give rise to.

Starting with no preconceived theory on the subject of uterine pathology, it has been my object, since I have been sufficiently informed and experienced in various methods of investigation, to endeavour to associate the sufferings of the patient with the abnormal condition giving rise to it. These observations have now been extended over a sufficient space of time to allow of the testing of deductions, and it has been my endeavour to present them truthfully and impartially, so far as I am able. The conclusion has forced itself on me that the changes in the shape and position of the uterus, but especially in the shape of the organ, are almost invariably responsible, in one way or another, for the sufferings of the patients who are the subjects of them. And, further, the conclusion no less inevitable, that the restoration of the proper shape of the uterus is the means of removing those sufferings.

These views, supported as they can be by ample details (see Analysis of Cases, Ch. I.), necessarily form the basis of the uterine pathology now to be enunciated. Of the accuracy of these views clinical experience has convinced me, and indeed they are the offspring of clinical experience.

Regarding the changes in the uterus, from a clinical point of view, they may be concisely stated under the following heads:—

1. Undue fulness of the blood-vessels of the organs, *congestion of the uterus*, which of course may be temporary or persistent.

2. Actual increase in the *bulk* of the organ due to abnormal increase in the solid constituents of the uterus, *slight hypertrophy*, which is sometimes associated with more or less marked *induration* of the uterus, but which may be associated with undue *softness* of the uterine tissues. This enlargement may affect the body of the uterus alone, as is not uncommon, or the whole organ.

3. Associated with one or both of the foregoing changes there is found with exceeding frequency a decided *change in the shape* of the uterus, which indeed amounts to a *deformity* of the organ.

4. Changes in the lining membrane of the uterus and of the cervix. Included under this head will come the conditions described as 'endometritis.'

5. Changes in the *position* of the uterus, as a whole, in the pelvis.

6. Acute Inflammation of the uterus.

7. Fibroid Tumours and Polypi.

8. Carcinoma.

9. Tubercle.

I now propose to discuss these various pathological changes in the above order, but the three latter, Fibroid Tumours, Carcinoma, and Tubercle, will hereafter be considered separately in distinct chapters.

1. First I propose to consider the condition of

CONGESTION OF THE UTERUS.

The typical condition of congestion is present during menstruation, the uterus being then engorged so far as its own tissues are concerned and the vessels situated externally, the surrounding plexus being also full of blood. It is probable that this 'erection' of the organ requires for its healthy performance a patent condition of the whole of the vessels of the organ, and it is reasonable to suppose that this patency of the vessels is essential to the healthy functional action of the uterus.

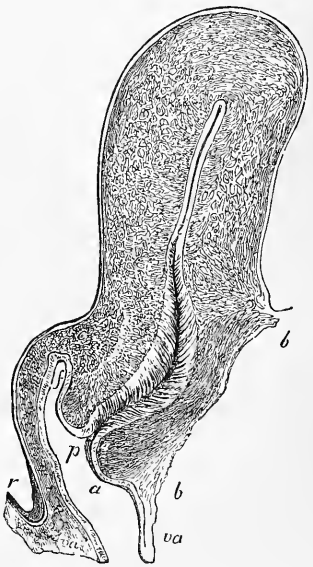
In a paper which I communicated to the British Medical Association, at the meeting at Leeds, in Aug. 1870, I endeavoured to direct attention to disturbances in the circulation of the uterus, connected with alterations in the shape of the organ, under the title of 'Strangulation of the Uterus.'

The uterus is, from the nature of its anatomical relations, liable to suffer from derangements of its circulation, inasmuch as the whole organ is capable of being bent upon itself to a certain extent. The conditions which may concur in producing a bending or flexion of the uterus do not concern us here, but accepting the fact that flexions do occur, a little consideration on the subject will convince any one that certain mechanical results, as regards the vessels of the uterus and the circulation in those vessels, are inevitable.

The vessels of the uterus enter for the most part along the sides of the organ. The *arteries* are derived from the uterine artery, which passes upwards from below, along the sides of the uterus,

giving off very numerous branches which pass inwards to the uterus, and the greater number of them about the situation of the internal os uteri. These branches of the uterine artery are mainly concerned in giving artificial blood to the uterus, but not entirely so, for there is a free inosculation at the junction of the Fallopian tube and the fundus uteri, between the extremity of the uterine artery and that branch of the spermatic artery which supplies the Fallopian tube itself. Were it not for this inosculation, which is effected, however, through a vessel small in calibre, the cutting off of the circulation in the uterine arteries would deprive the body of the uterus of blood.* The *veins* issue from the sides of the uterus, forming large plexuses around the organ. It follows from these considerations that the application of a ligature round the uterus at about its middle would materially affect the circulation in the body of the uterus, and that it would tend at the least to induce congestion of the body of the uterus, while the effect of such ligature would not interfere materially with the circulation in the cervical part of the uterus. A ligature is substantially applied to the uterus when it is flexed or bent upon itself; the amount of arterial supply from the uterine arteries is then lessened from the compression these vessels undergo. It is true that the vessels are outside of the uterus, and it may be conceded that the bending of the uterus itself may leave the main trunks still patent as ever, but the moment they enter the tissues of the organ they inevitably fall under the effect of compression. A disturbance in the circulation in the body of the uterus thus results —a disturbance which the small anastomotic branch connecting the spermatic and uterine arteries cannot adequately rectify. Probably this 'strangulation' of the uterus, which is a term I propose to employ in designating it, is present to a greater or less degree in all cases of flexion,

Fig. 7.



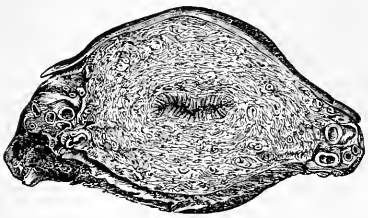
* The arteries of the uterus are well delineated in Plate V. of Dr. Savage's work, 2nd ed.

being more marked in proportion to its degree, also in proportion to its sharpness.

The accompanying drawing (fig. 7, from Dr. A. Farre) represents a section of the uterus, and exhibits the thickness of the uterine walls.

A second figure (fig. 8, also from Dr. Farre) exhibits a *transverse* section of the uterus at the situation of the internal os, and the section of the uterine vessels as they lie at the sides of the uterus is very well shown.

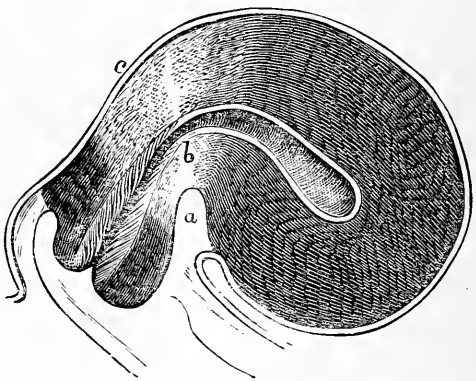
Fig. 8.



With these two figures before us it is easy to understand what happens when the uterus comes to be acutely bent. The next drawing (fig. 9) I have carefully made, in order to represent the condition present in anteflexion of the uterus, and the effects of the flexion in compressing the uterine tissues at the concave side of the bend. The walls of the uterus are also drawn thicker, and show the congestion which results in the whole of the upper part of the uterus from the compression of the vessels.

It is somewhat surprising that the occurrence of mechanical congestion of the body of the uterus, arising from mere change

Fig. 9.



of shape of the organ, as above pointed out, should not have attracted the notice of uterine pathologists. It is a pathological fact which clinical experience has made me acquainted with, but it is a condition which *à priori* reasoning should have prepared us for.

This strangulation of the uterus, produced by compression of the tissues at its central part, has effects which are very important clinically, beyond the mere congestion. The congestion may be accompanied by extreme sensibility of the nerves of the uterus, and it has been found to be associated in numerous cases which have fallen under my notice with marked hysterical phenomena. The fundus of the uterus under these circumstances becomes engorged, and at the same time sensitive to the touch to an extraordinary degree. This subject will be further developed when I come to speak on the subject of hysteria. Here, however, it must be stated that the tenderness of the fundus uteri is always found to be greatest in degree in cases where this mechanical flexion congestion is most marked, viz., in certain cases of retroflexion of the uterus. The disorder which Gooch described as 'the irritable uterus' is really nothing more or less than this condition become chronic. In the chapter on flexions I shall discuss this latter condition more fully.

Sickness, another most important attendant reflex phenomenon, is due, I believe, to a like cause.

Congestion of the uterus may of course exist apart from alteration in the shape of the uterus, for the uterine circulation may be retarded and sluggish under a variety of circumstances. The physiological menstrual congestion may become prolonged, or may not pass off properly, leaving the organ perhaps permanently congested between the menstrual periods. Slowness in the action of the liver and other digestive organs will intensify or produce such congestion of the uterus. A loaded condition of the bowels, or mechanical pressure from tumours in the abdomen, may also lead to similar effects. Sexual indulgence carried to an excessive degree is an important cause of uterine congestion. One of the most important is sub-involution of the uterus after parturition. This condition predisposes strongly to chronic simple congestion of the uterus, the organ does not return to its proper size, mostly owing to a sluggish condition of the nutritive processes in the body generally, and the uterus acquires thereby a permanent tendency to congestion. Miscarriages appear particularly to aid in the production of a chronic tendency to congestion.

In reference, however, to the connection between abortions and congestion of the uterus something especial has to be said, for a third element is so generally, according to my experience, introduced into such cases that it must be a very important one; I

mean the presence of flexion of the uterus. I postpone, however, for the present further details on this subject. (See 'Effects of Flexions.')

Congestion of the uterus implies of course slight increase in the bulk of the organ; by 'slight' I mean to the extent of an increase of one-fourth or thereabouts. The result of this is increased heaviness of the organ, important in reference to the predisposition to displacement thereby created.

Congestion of the uterus as a whole implies also, generally, congestion of the lining membrane of the uterus and of the cervix: hence an increase of the quantity of the mucous discharges from the uterus. Simple congestion of the uterus may thus cause lividity, turgidity of the lining of the cervix and os uteri, and leucorrhœa.

The consistence of the tissues of the uterus when congestion is present is not alike under all circumstances. The tissues are usually unduly soft and the organ more pliable than ordinary as a consequence; the quasi-erection which accompanies the physiological congestion of menstruation implies on the other hand something different to softness. As a matter of fact I believe that congestion of the uterus apart from such erectile condition is almost invariably attended with softness of the uterine tissues, unless in cases where the affection is of long standing, for after a time the tissues of the uterus, long the seat of congestion, become indurated, and something more than congestion is then present.

Lastly, I would remark that congestion of the uterus is a most important condition, it being the first step towards what may prove to be a settled, obstinate disease of the organ. The first step is here as in other matters a very important one.

2. INCREASE IN THE BULK OF THE UTERUS.

A slight increase of the uterus due to congestion has been already described; this congestion is often temporary, the organ returning to its proper size afterwards. But the tissues of the uterus may become permanently increased in bulk. They are generally at the same time *indurated*, though we now and then see cases where the enlarged uterus is softer than usual. After death the tissues of the uterus may be found so hard as to creak under the knife, and during life the hardness is often obvious enough to the touch. The induration and increase in bulk are

due to excessive deposition of connective tissue (Virchow) or to increase of the muscular structure (Scanzoni), and probably to both these conditions in variable degrees in different cases.

The whole uterus may be affected, there being a general hypertrophy of the body as well as of the cervix of the uterus. When this is the case—and it is somewhat rare—the addition to the bulk of the uterus consists of muscular tissue for the most part.

But the two extremities of the uterus are the situations where increase in bulk are more commonly observed. Chronic enlargement of the body of the uterus is the most common of all, but it is by no means rare to find the cervix affected. It is rare according to my experience to find the cervix alone affected with simple chronic enlargement.

The term 'chronic inflammation' has been largely used to designate the condition now under consideration. I have avoided using it hitherto in discussing these pathological conditions of the uterus, not wishing to be tied down to any particular theory with which this term might be associated. The condition is one of abnormal activity of the nutritive process; to say that there is too much growth and too little vitality would perhaps be correct. The condition results most frequently I believe from long-continued interference with the circulation in the uterus—permanent congestion in fact—ending in permanent increase of the fibrous muscular and connective tissues. Simple congestion of the uterus long enough continued, and from whatever cause it may arise, may end in producing an enlarged indurated condition of the organ.

Increase of bulk is rather frequently observed at the os uteri, the lips of which become enlarged, thickened, and otherwise changed. There is frequently nothing more than simple congestion present in these cases. But this congestion, when it has lasted for any considerable time, passes into a condition of chronic activity of the secreting structures of the part, of morbid vascularity, &c., conditions for which the term 'chronic inflammation' seems appropriate. The hypertrophy of the villi (described erroneously as ulceration), and hypertrophy of the tissues generally, which may be witnessed in all degrees and of all kinds, are further results. In the first stage of 'inflammation' of the kind now under consideration, we find the os uteri open, larger than usual, the lips swollen, usually soft, and a copious secretion proceeding from the cervical canal. The congestion present shows itself, as would be expected, most prominently in the

mucous membrane itself, hence the large size which the papillæ acquire, the fungiform appearance they are liable to assume, and the increase in the secretion poured out from the entire mucous surface.

In another class of cases, in addition to the characters described, the lips of the os uteri are indurated, as well as enlarged, the enlargement being itself more considerable than in the class of cases just alluded to. The hypertrophy now under consideration must not be confounded with that condition in which the cervix is *elongated*, and which is of a different nature. The size of the os is here increased, the finger passes in readily, there is a more or less copious secretion, and the lips of the os are very frequently split up, so to speak, into rounded elevations, between which are deep fissures. The elevations themselves are hard, firm, pretty uniform in density, and the vaginal portion of the cervix uteri may thus attain a very considerable time. This condition is met with in women who have had children, and who have been under the same etiological conditions as those included in the last series of cases. The fissures result from slight lacerations occurring during parturition, which, originally perhaps very slight in degree, become magnified, owing to the increase in size of the lips of the os. The bulk of the enlarged labia is composed, not so much of inflammatory products as of actual hypertrophy and increase of the normal tissues of the part. The hardness presented by the lips of the os under such circumstances is often very remarkable (see 'Digital Examination of the Os Uteri'), and such as to excite in the mind of the inexperienced observer a suspicion of the affection being cancerous. The body of the uterus is generally simultaneously affected in the same way in these cases. Erosions and ulcerations may be observed in connection with the affection. Slight exudations of blood often take place from the surface of the hypertrophied mucous membrane, and the discharge as it appears at the vaginal outlet is consequently sometimes of a sanious character.

3. CHANGES IN THE SHAPE OF THE UTERUS—ACQUIRED DEFORMITY.

These changes, as already stated, I regard as of infinite importance in the pathology of the diseases of the uterus. They will be described in detail further on, but in this place it is necessary only to point out their relation to other pathological alterations of the uterus.

It is not a matter of indifference to the uterus that it should be acutely bent upon itself, and have its shape distorted and otherwise changed. And yet the views which have held sway in the profession up to quite a recent period have, tacitly at all events, allowed only of this inference. On the contrary the uterus resents this, and the discomfort of the patient, the interference with the uterine functions which physical alterations of its shape give rise to, are almost invariably of a very marked character.

The relation which flexions of the uterus bears to congestion and chronic inflammation of the organ appears to be of the following kind:—

The bending of the uterus, which may occur suddenly or more slowly, inevitably induces, in the manner already described, congestion of the organ, especially of its upper part. If the flexion becomes confirmed, the congestion becomes more or less persistent. Finally, the part which is the seat of the congestion becomes indurated and hypertrophied.

The flexion itself is frequently preceded by a certain degree of congestion of the body of the uterus or by an undue weight of the body of the uterus. Thus the uterus during menstruation, or the uterus after parturition, may come to be affected with flexion.

The greatest amount of physical suffering is present in cases where the flexion varies in degree from time to time. This is precisely what we should expect, for the amount of congestion present is thus made to vary from time to time also.

Acute flexion of the uterus is invariably attended with acute congestion. When this state of things remains for any considerable time, the part of the uterus the seat of the congestion passes into a state which it has been customary to describe as 'chronic inflammation.' It matters little what it may be termed, but its relation to the flexion is the important element in the matter. When the flexion has become confirmed the congestion (or inflammation) continues or not. It is usually the fact that the congestion remains, but in some few cases, and, after the lapse of a very considerable time, the flexion may be the only discoverable alteration in the uterus; the circulation in the organ has in process of time, and after the patient has passed through years perhaps of discomfort, become adapted to the altered shape. This exceptional fact, for exceptional it undoubtedly is, has formed the basis of very untenable and incorrect views as to the real importance of flexions.

The changes in the uterus before described, congestion and increased size, are, one or both of them, almost invariably found

to be present along with the flexion. As already stated also, there may be undue hardness or undue softness of the uterine tissues.

In this place I have limited myself to a statement of the textural changes in the uterus connected with flexion. There are many other effects—prolapsus, neuroses, reflex phenomena, various complications also, but these will be hereafter described.

4. CHANGES IN THE LINING MEMBRANE OF THE UTERUS AND CERVIX.

Inflammation of the lining of the *body* of the uterus, 'endometritis,' is regarded by some pathologists as a very important condition. But it is rare in the extreme as a separate and distinct phenomenon. Hypersecretion from the lining of the body of the uterus is not rare, nor is probably undue vascularity of the lining membrane very rare ; but these conditions are generally secondary to general congestion of the uterus, associated or not with flexion. Injuries to the interior of the uterus by the incautious use of the sound, or other directly irritating agents, may of course set up inflammation there.

The absence of a free outlet for the uterine secretions is a fertile source of irritation to the uterine lining. Thus the flexions of the uterus are causes of such irritation, leading, as they do so frequently, to a partial and valvular closure of the internal os uteri. The fluid collects in, and distends the body of the uterus, it is retained and becomes irritating.

The importance which 'endometritis' holds in the estimation of some uterine pathologists necessitates a discussion in this place of the whole question. Those who, rejecting as unphilosophical and untrue when tested clinically, the theory of all uterine maladies being situated at the cervix, and who contended for the body of the uterus having a little more attention paid to it, have been themselves divided into two camps. Some have held that the tissues of the *walls of the body of the uterus* are affected with inflammation, others consider the *lining of the body of the uterus* to be the principal seat of the disorder.

In the 2nd edition of this work I expressed my agreement with those who, like Scanzoni, contend for the importance of the affections of the body of the uterus. Since that time the facts which have come under my notice, and bearing on the 'endometritis' theory, have led me to form very definite ideas on the subject. The presence of excessive discharge from the interior of the body

of the uterus is in so many cases obviously connected with an obstruction at the internal os uteri leading to retention of the secretion within the uterus, that it seems to me impossible to escape the conclusion that it is this obstruction which is responsible for the excessive secretions. Under the head of 'Flexion' of the uterus this matter will require further development; but here I would state that the facts and the results of that special treatment for endometritis which is in favour with some practitioners equally fall in with this view of the case.

Accepting, therefore, the assertion—which is undeniable—that in certain cases the lining of the body of the uterus is in a disordered state, evidenced by profuse secretion from it, by purulent or offensive discharge therefrom; and, putting on one side cases of cancer, cases (very rare) of tuberculosis of the uterus, cases of gonorrhœa and syphilis, I would venture to express the opinion that this disordered state of the lining of the body of the uterus is the result of retention of natural secretions and the irritation proceeding therefrom.

I have alluded to the treatment of endometritis. The pathology of this condition is further elucidated by considerations drawn from the results of treatment. Those who look upon the lesion of the mucous lining of the uterus as the essential part of the disease recommend dilatation of the uterus and direct application of various agents, caustic, tincture of iodine, &c., to the interior. But inasmuch as evil consequences, i.e., uterine inflammation was found to be produced by such agents, without previous full dilatation of the cervix, it has come to be an essential part of this intra-uterine medication that the cervix should be previously thoroughly dilated by tents. The result of this combined treatment is described—and I do not dispute it—as being favourable. The favourable result is attributed to the intra-uterine topical application. But the result is sufficiently explained by the dilatation which by straightening the canal renders it thoroughly patent and allows of the escape of the secretion: the retention of secretion does not then occur. For a time, in many cases permanently, the cure is complete. My interpretation of the facts is borne out by the fact that, without employing intra-uterine topical applications, I have found these affections removed by the straightening process alone.*

* A paragraph from a pamphlet I have just received, by the kindness of the Author, from Dr. Miller, *Retrospect of Uterine Pathology and Therapeutics in the United States, specially in regard to Intra-Uterine Medication in Chronic Internal*

That the lining of the body of the uterus may fall into a diseased state, that idiopathic endometritis may exist, I do not intend to deny, but my contention is that some mechanical retention due mostly to flexion, sometimes to fibroid tumours, is the basis of the malady in the so-called cases of 'endometritis,' taking the phrase in the most generally received acceptation of the word. We have a parallel case in cystitis, the most troublesome varieties of which, in the male subject, are associated with stricture of the urethra, the essence of which malady is interference with the due discharge of the bladder contents. (See also Chapter on 'Leucorrhœa.')

The mucous membrane lining the *cervix* of the uterus is very frequently unduly congested, thickened, and the seat of excessive secretion. This condition is usually connected with congestion of the uterus generally, but may be seen apart from such general congestion.

The appearances presented to the eye during life when the os uteri is exposed to view by the speculum have been already described. The pathological deviations so observed consist in undue vascularity, which may become so intense that the lining membrane of the cervix is of a deep claret colour, bleeding readily when touched and secreting profusely. In the chapter on 'Leucorrhœa' these various conditions will require special attention.

The conditions described formerly as 'ulcerations' referred for the most part, as already stated (see 'Examination by Speculum'), to conditions not of the nature of ulceration at all.

The theory which, next to the 'ulcerative' theory, held sway amongst some uterine pathologists of high repute is that

Metritis, reprinted from *Amer. J. of Obstetrics*, Aug. 1871, may be here given as showing our agreement in facts, widely as we differ in the interpretation of them. Dr. Miller is replying to a criticism by Dr. Nott, who, it appears, had criticised Dr. Miller's method of medicating the cavity of the uterus. Dr. Nott speaks of the 'puddle of albuminous fluid' which may be found in the uterus if it be flexed, and urges the other obstacles produced by flexion of the uterus to Dr. Miller's method. Dr. Miller replies:—'I answer it all by admitting the frequency of flexion of the uterus, particularly retroflexion, as an accompaniment of its pathological state, while I contend that this is one of the strongest arguments in favour of my method. When there is retroflexion accompanying internal metritis, I invariably rectify it with the sound, as a part of the preparation for cauterisation, and immediately upon the withdrawal of the sound pass in the armed probe, with its curvature forwards, so as to cauterise it *in situ*; and should the uterus retrovert again before the probe can be introduced, I use it (the probe) as a sound to replace the uterus, and at the same time to cauterise it. In this way the displacement of the uterus may be corrected, in some cases, by the time its inflammation is cured.' Neither of these gentlemen appear to perceive the influence or importance of the flexion.

which refers uterine maladies for the most part to inflammatory conditions of the os and cervix uteri, the highly vascular, excessively secreting, surfaces exposed to view by the speculum being supposed to be the principal and the important elements in the case. These changes at the os uteri have certainly been very much overrated in regard to their frequency and intensity, and, according to my view of them, wholly misconstrued in regard to their actual nature. They are secondary, not primary; the primary affection being, in the large majority of cases, a tangible and notable alteration of the body of the uterus. According to my experience, primary inflammation of the os uteri is a rare affection. (See chapter on 'Leucorrhœa.')

5. CHANGES IN THE POSITION OF THE UTERUS AS A WHOLE IN THE PELVIS.

These changes, including prolapsus of the uterus, with its varieties, are exceedingly important. As a rule, they are secondary to other alterations of the uterus or adjacent organs. As such, however, they intensify those primary affections, and not uncommonly constitute the only malady present, the primary one having perhaps disappeared. The chapter on 'Prolapsus' will be the fitting place for the full discussion of this exceedingly interesting and important subject.

6. ACUTE INFLAMMATION OF THE UTERUS.

Acute inflammation of the uterus is a rare event. But it is always a very serious one, generally dangerous, and fatal to a degree.

Idiopathically, it occurs so rarely that it can hardly be described, the materials being wanting. It has been said to occur from sudden suppression of the menstrual flow; but the possibility of its so being produced is doubtful, the cases so described having been probably accidental effusion of blood into the peritoneal cavity, a phenomenon which is liable to be attended with very severe symptoms. It is also stated to have occurred in connection with gonorrhœa.

Traumatically, it is a well-recognised phenomenon. Wounds, or operations on the cervix or os uteri, use of tents for the purpose of dilating the cervix uteri, the incautious use of instruments

such as intra-uterine pessaries, these are the causes of this rare but serious event.

The affection appears to be essentially of the nature of pyæmia, attended with severe pain, a well-defined commencement, and a rapid course. There is almost invariably evidence of the absorption by the internal lining of the cervix or uterine canal of certain decomposing materials, which surface has been previously broken, injured, or bruised at some point. Its symptoms much resemble those of some form of puerperal fever.

A typical case occurs as follows:—Within a few hours, sometimes within a few minutes, of the time of the absorption of the irritating agent by the uterus, the patient experiences an acute pain in the hypogastrium, concurrently with which she experiences a sharp and well-marked rigor, and a feeling of unmistakable and profound illness. The pulse instantly rises in frequency, running up in a few hours to 120, 130 in the minute, the temperature also quickly attains a great height, 102° to 103° being noted within a few hours. The hypogastrium is acutely sensitive to the touch almost from the beginning, the patient lies with the knees drawn up, and shrinks before the slightest attempt to explore the state of the lower part of the abdomen. There may be sickness very shortly, or the sickness may be delayed in its occurrence; sickness of an uncontrollable character is often observed the following day and persists until the fatal termination. The vagina becomes very hot to the touch, the uterus itself felt swollen and sensitive to an extreme degree. Profuse perspiration, generally given as a symptom of pyæmia, has not been present in the cases of acute inflammation of the uterus which I have observed.

The further progress of the disease is marked by increase of frequency of pulse, temperature running up to 103° or even 107°, continued prostration, extension of the inflammation (generally) to the peritoneum, hurried respiration, great weakness of the pulse, and death, or passing of the disease into a less acute stage, and, possibly, the beginning of recovery.

The pyæmia thus occurring is perhaps the most rapid in its course of any of the known forms of this affection, probably owing to the great vascularity of the uterus, and the great rapidity with which absorption from its interior is liable to occur.

The pathological appearances after death are usually undue size and softness of the uterine tissues, and evidence of peritonitis on the external part of the organ. In the uterine tissues themselves there is little evidence of change.

TREATMENT OF ACUTE INFLAMMATION OF THE UTERUS.

Nothing short of very prompt and decided measures are likely to be of avail in the pyæmic (the only one I have witnessed) form of the affection. The instant administration of large doses of alcoholic stimulant, beef tea, eggs, soup, and easily assimilated but strong nourishment of all kinds are to be given; and when the stomach rejects food, the support is to be administered by enemata.

Ammonia and strong doses of tincture of perchloride of iron are the medicines on which I should place greatest reliance. When the pain is great opium should be given.

Locally, the treatment will consist in applications of flannels wrung out of boiling water and sprinkled with turpentine over the whole abdomen. Laudanum may be used together with the turpentine. The vagina may be advantageously syringed occasionally with a disinfecting tepid fluid.

The affection is not necessarily a fatal one if taken in hand promptly and energetically.

TREATMENT OF CHRONIC CONGESTION OF THE UTERUS AND (SO-CALLED) CHRONIC INFLAMMATION.

In this place it is necessary to devote a short space to the general discussion of the treatment of certain of those alterations of the uterus described in the foregoing pages, more particularly of 'congestion' and alterations in the tissues of the organ not associated with flexions or changes in shape.

We have here to deal with the commencement of uterine disease, and it is at this stage that we can apply and inculcate general principles of treatment. The preventive treatment here also finds its application.

There are two classes into which all cases of chronic nutrition changes in the uterus may, for therapeutical purposes, be divided, viz. 1. Cases in which they are of local origin; 2. Those in which they are of constitutional origin. The treatment is preventive and curative.

Defective involution of the uterus after delivery is a condition which frequently leads to troublesome chronic uterine disease, and it is of the utmost importance, in cases where there is a tendency to the affection, to take steps to insure contraction of the uterus

after child-birth. The patient should maintain the horizontal posture for some days, and should not be allowed to perform movements calculated to strain the abdominal muscles. And as soon as possible after the lochia have ceased, the use of the hip-bath, or of the vaginal douche (see 'Leucorrhœa'), should be commenced. Great care should be taken to prevent constipation of the bowels; the diet should be nourishing, exercise should be taken in moderation, at first; walking is to be prohibited. The treatment should be persisted in for some weeks after the labour. It is usually advisable to apply a moderate support to the abdomen by means of an elastic bandage. Very great benefit will be derived from attending to these simple rules, and it is very certain that a neglect of them has frequently the result of perpetuating a troublesome and painful disease. It is important, as a further means of securing perfect contraction of the uterus after delivery, to induce the patient to suckle her child, although this course cannot from the debility of the patient always be recommended. In women who are liable to abortions (which, according to my experience, means women affected with uterine flexion), it is necessary to take double precautions; we frequently find that the uterus becomes diseased from the fact that the pregnancies rapidly succeed each other, the uterus not having recovered its natural size when it becomes again occupied by an ovum. In such cases, unless care be exercised, the liability to abortion is perpetuated, and the local evil intensified. We must insist on the necessity for allowing the uterus a period of rest; this is equally necessary after an abortion, and after an ordinary labour; in many cases, the habit of abortion is only to be broken through by enforcing a separation of the husband and wife for some months, during which time efforts are to be made to reduce the uterus to its normal size and to its natural condition. There can be no doubt that by judiciously watching over and supervising the function of parturition, and regulating the conduct of the patient afterwards, we can effect much good in cases where the uterus is in a state of chronic enlargement and congestion.

So, also, with reference to menstruation and its disorders. It has already been pointed out that when the menstrual fulness and enlargement of the uterus are prolonged over the normal period, or when the menstrual periods follow each other too quickly, the uterus falls gradually into a state of disease; the organ never thoroughly recovers its non-menstrual condition, its tissues are habitually in a lax, atonic condition; and, after this state of things

has existed for some little time, the whole organ becomes somewhat increased in size.

The next element in the preventive treatment, as it may be termed, of chronic congestion of the uterus, is the removal of conditions, partly local and partly constitutional, tending to produce congestion of the abdominal, and especially of the pelvic viscera; there can be no doubt that the uterus is very prejudicially affected by the presence of vascular fulness of the other abdominal viscera. Mechanically, also, an overloaded state of the abdominal viscera, consequent on disorder of the digestive apparatus, tends to give rise to, or at all events to perpetuate, chronic fulness of the uterine vessels; and thus the removal of abdominal congestion and the cure of disorders of the digestive organs are often essential to the cure of chronic congestion of the uterus.

In the class of cases next to be considered, the *constitutional* element in the causation of the disease is of extreme importance in reference to the question of treatment. My esteemed friend the late Dr. Rigby (*secundus*) achieved great reputation for his able exposition of this subject, though it must be confessed that his views in this direction were carried to what I should term a rather extreme point. In many patients affected with chronic uterine disease, the starting-point of the mischief is clearly disorder of the general health; and, although the uterine symptoms cannot be neglected, the primary object is to restore the body to a healthy state. The importance of keeping this fact in view cannot be overrated. The constitutional disorder and its exciting cause must, in the first place, be removed, after which, or in association with which, attention will be advantageously directed to the local treatment of the uterine disease. In these cases, also, a systematic supervision of the functional actions of the uterus must be carefully carried out.

The 'irritable uterus' (Gooch) and its treatment will be discussed under the head of 'Flexions.' It is a compound of congestion and change of shape of the uterus.

Local Treatment of the Uterus.—In cases where the uterus is *not* the seat of an alteration in shape and where the congestion stands alone, there is nothing to be said in regard to the mechanical treatment. But when there is such change of shape, general measures alone will prove unsatisfactory, and any improvement obtained will be only temporary and evanescent. Directions as to the mechanical treatment will be given in the chapters on Flexions and Prolapsus.

When the mechanical treatment, if required, has been attended to, the best results may be expected from general measures, and various internal remedies may be required for the purpose of accelerating the rapidity of the nutrition process in the uterus, for reducing its size, and for melting down local hypertrophies.

Of these *internal remedies*, undoubtedly the first is good and nutritious food, administered under the favourable influences of fresh air and general hygienic concomitants. Assuredly food is a great curative agent.

Blood-letting, by means of leeches applied to the os uteri, is a powerful means of reducing congestion of the uterus. If there were no other means of removing this congestion leeches would continue to be, as they have been, extensively employed in dealing with this condition. If, however, my explanation of the mechanism of congestion be true, we have a more rational and efficacious means of removing it by removing its cause. I propose to discuss this subject more at length in the chapter on Flexions.

The *curative* treatment consists in the application of local appliances or remedies, and the exhibition of internal remedies.

Internal Remedies.—Iodine and bromine appear to have an indirect effect, when taken internally for some little time, in reducing (or increasing?) the activity and intensity of the uterine functions, and they have been found of great service in long-standing cases of chronic enlargement and congestion of the uterus. The action of these remedies is apparently of an indirect nature, and they have been found of most service when taken internally, at the same time that the patient is using baths or injections containing iodine or bromine in solution.

Ergot is a remedy which is very serviceable in reducing the size of the uterus in cases of defective involution and congestion of the uterus. It may be given twice a day.

A mild mercurial course, consisting in the exhibition of minute doses of the bichloride of mercury, has been recommended by Dr. Oldham for the purpose of reducing the size of a uterus enlarged by chronic inflammation; it is a remedy which has been found very useful by several practitioners, and I have myself employed it with advantage. If the patient be of weakly habit, and if there be any 'constitutional' debility present, it is not to be recommended. The dose should be so small as not to affect the gums, and the treatment requires to be persevered in for a considerable time.

The treatment of chronic uterine disease, of the kind now under

consideration, by means of *mineral waters*, requires a distinct notice. In obstinate cases, the greatest benefit is sometimes derived from the internal and external use of mineral waters of various kinds; the effects produced being dependent partly on the change of scene and occupation, partly on the increased activity of the skin induced by the use of the baths, and partly on some special action of the waters used. The choice of a watering-place is a matter of some moment. In cases complicated with dyspepsia and with defective action of the abdominal circulation, Vichy or Hombourg may be recommended. Where the action of the abdominal viscera is sluggish, and where there is great constipation, the baths of Carlsbad or Marienbad are very useful, especially in the case of patients who have been in the habit of indulging too much in the pleasures of the table. Many others might be mentioned, equally efficacious in improving the condition of the abdominal circulation and the state of the digestive organs, such as the waters of Püllna, Seidlitz, Purton, &c., which contain sulphate of magnesia and soda, and are therefore of an aperient character. In cases where we desire to act chiefly on the skin, and to effect a derivation to the surface, the 'indifferent' thermal waters offer advantages; the waters of Wildbad, Schlangenbad, Gastein, Clifton, Buxton, &c., deserve mention in this respect. Warm sea-water baths act in like manner; they are very efficacious, and have the additional advantage of being pretty accessible. There are cases in which the uterus and pelvic organs generally appear to be in an atonic relaxed state, and for the relief of this class of patients chalybeates are found most serviceable. The waters of Schwalbach, Pyrmont, Spa, Driburg, Kissingen, Franzensbad, and Fachingen, are the best adapted for patients suffering from the above symptoms, associated as they usually are with anæmia, pallidity of the surface, tendency to headaches, &c. The iodo-bromated waters of Kreuznach, Hall, Durkheim, and Krankenheil, are specially to be recommended in cases of the more chronic kind, especially when the uterus is the seat of indurations however caused. The Woodhall Spa in Lancashire is beginning to enjoy a reputation for qualities analogous to those of Kreuznach. For neuralgic or rheumatic cases, Wiesbaden, Baden-Baden, Ems, and Bath enjoy deserved repute. In cases where it is considered desirable to administer iron in small quantities, together with an aperient, waters such as those of Kissingen or Selters are the best. The baths of Driburg have been found peculiarly efficacious, taken

during pregnancy, in cases where there is a tendency to disease of the fœtus; the waters in question are chalybeate, but contain also lime in solution.*

Topical Remedies.—The os and the vaginal portion of the cervix uteri are very accessible, and thus these portions of the uterus can be directly and easily submitted to local medication. In many cases of induration of the os or cervix, these topical measures are of great service. And the whole uterus can be influenced in a considerable degree by certain of these measures.

Application of Cold Affusions.—First and most important in the list of local remedies is the frequent application of cold or tepid water, by means of injections, to the cervix uteri. (For the manner of employing such injections, see 'Leucorrhœa.') To produce a curative effect, injections must be persevered in for a considerable time, and care taken to insure their efficient administration. The continuous and repeated irrigation of the cervix brings about an improvement in a variety of ways. The bulk of the uterus itself becomes diminished, the congestion is removed, the secretion of the glands of the cervix is lessened. In cases where the vaginal portion of the cervix has attained a considerable size, owing to a long continuance of the diseased condition, and to a morbid rapidity of growth of the structures of the cervix, the best effects follow from the assiduous application of cold, in the manner here alluded to, although this treatment alone, as might be expected, fails in completely curing the disease in long-standing cases. This degree of improvement will not, of course, be witnessed where the enlargement depends on development of fibrous or other tumours in the cervix uteri.

Medicated injections are sometimes very useful. Thus the mother lye of Kreuznach which may be readily obtained (or the same salts in powder) is an exceedingly good one. A rather saturated solution should be used, and the patient ordered to lie on the back for some minutes after it is introduced. For further information the reader is referred to the chapter on Leucorrhœa.

Application of Leeches.—The general question as to the necessity or utility of leeching has been discussed elsewhere. Respecting the manipulations necessary in applying leeches to the os uteri, a word or two may be required. It has been found in practice to pro-

* For further information on the subject of baths, see Dr. Althaus' work, *The Spas of Europe.* London: Trübner.

duce unpleasant or inconvenient results when the leeches have attached themselves either within the os uteri, or on the walls of the vagina. A moderate-sized speculum is to be first introduced, so that its upper extremity touches the vaginal portion of the cervix at every point, and a small piece of lint is next inserted in the os itself. The leeches (three or four in number) are then pushed up the tube, and allowed to fix themselves on the exposed portion of the cervix. It may be necessary to use an injection of tepid water previously to applying the leeches, and to remove the discharge covering the surface of the cervix by means of a piece of lint. When the leech attaches itself to the interior of the os, or to the vaginal wall, the patient usually experiences, especially in the former case, sharp pain. To detach the leech under such circumstances, an injection of salt and water is to be used. It must not be forgotten that the bleeding from leech bites on the os uteri is sometimes very profuse, and I have heard of cases where it has been alarming.

Scarifications of the congested uterine cervix, either externally on the surface of the vaginal portion, or internally in the canal of the same, are of great use in some instances, especially in reducing the size in cases of hypertrophy of the part. The remedy is applicable to the same class of cases as those requiring leeches. A number of slight scarifications are better than two or three deeper ones. In performing scarification of the cervical canal, a small knife of peculiar shape and construction is necessary.

Caustics.—Those who attach so great an importance to the so-called inflammatory affections of the os and cervix uteri, advocate the necessity for the assiduous employment of caustic agents in dealing with them. Neither the pathology nor the treatment inculcated in this work are in conformity with these views.

Whilst the 'ulceration' theory was most in vogue, the strongest possible caustics were employed, potassa fusa, potassa cum calce, acid nitrate of mercury, &c., and the part to which it was applied actually destroyed to a considerable depth. I believe that this great destruction of tissue is not now so much insisted on, even by those who still adhere to the pathological views on which the treatment was based, milder caustics having replaced them.

These destructive operations on the os and cervix uteri are not in my opinion to be recommended. Nor have I seen cases in which the application of caustics to the upper part of the cervical

canal, still less to the cavity of the uterus itself, appeared necessary or of utility.

But certain caustic agents are of service in accelerating the removal of hypertrophies of the lips of the os uteri. The solid nitrate of silver and the iodine liniment, or the liquor (which latter is the weaker) of the British Pharmacopæia, are the agents I prefer. In any case the os and cervix being well exposed, the secretions are to be removed and the surface well dried by means of a piece of lint or cotton wool, and the caustic then applied.

The only cases in which stronger agents seem admissible are those in which there is a small growth which requires actual removal—for instance, those in which the interior of the os presents those excrescences or developments of the mucous membrane known as *mucous polypi*, those cases also in which the mucous follicles around the os become swelled out and distended, presenting the little round enlargements known as the *Nabothian bodies*. In the application of the stronger caustics, we have an expeditious mode of dealing with the pathological conditions in question. The rare cases in which true *chancre* of the os or cervix uteri is present come under the same category.

Whenever the strong caustics are used, very great care is necessary to prevent the tissues adjoining to the cervix uteri from being injured. These tissues must be guarded in a suitable manner during the operation, and precautions used to prevent the caustic applied to the surface of the cervix from coming into contact with the opposed surfaces of the vagina, when the operation is over, and the speculum withdrawn.

The *actual cautery* has been a favourite remedy, especially in France, in the treatment of chronic induration or inflammation of the vaginal portion of the cervix uteri. The application is made through a horn speculum, specially constructed for the purpose, and is repeated at intervals of a few days, each portion of the indurated surface being thus successively covered with eschars.

The *excoriations* or abrasions, which are occasionally observed on the vaginal portion of the cervix, and which are to be distinguished from the so-called 'ulcerations' of the mucous membrane of the cervical cavity, are generally, as already stated, very secondary in importance. They are only observed in cases where the other morbid conditions present call more directly for attention;

and they usually disappear when those other morbid conditions are removed. They are best treated by applying a solution of nitrate of silver, or the solid stick itself, to the surface affected; while the uterus is maintained in a state of rest, and care taken both to remove the congested state of the organ, and to diminish the excessive secretion of the cervical glands therewith usually associated.

CHAPTER IV.

EXAMINATION OF THE UTERUS.

Digital Examination of the Uterus from the Vagina.—Position of the Patient—Normal Position of the Uterus—Various Conditions affecting the Position of the Uterus—Mobility of the Uterus.

Double Examination of the Uterus.

Digital Examination of the Os Uteri and of the Vaginal Part of the Cervix Uteri.—Normal Condition of the Os and Cervix—Method of Examination—Apparent absence of the Os Uteri; various causes—Unusual Softness of the Os Uteri from Pregnancy or other Causes—Unusual Hardness of the Lips of the Os Uteri; its Causes—Size of the Os Uteri—Variations in the Length of the Vaginal Portion of the Cervix Uteri; Relation of Pregnancy to this Condition.

Examination of the Uterus by Means of the Sound.—The Instrument; Method of Introduction—Variations in the Length and Direction of the Uterine Canal detected by the Sound.

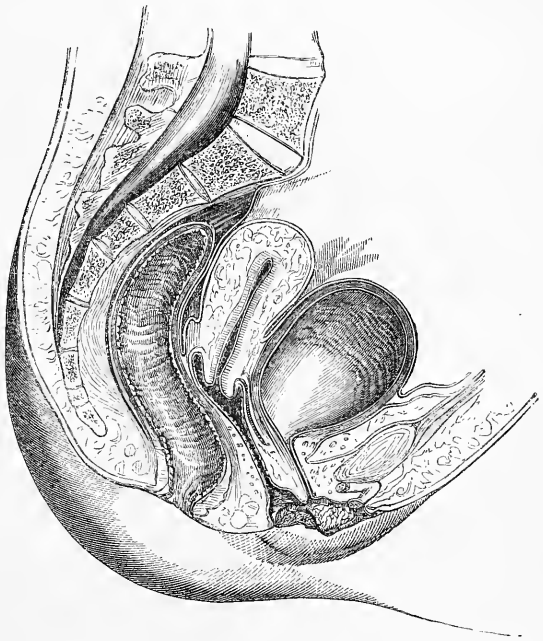
Examination of the Os Uteri by Means of the Speculum.—General Rules—Method of Using the Instrument—Description of Various Instruments.

DIGITAL EXAMINATION OF THE UTERUS FROM THE VAGINA.

To practise digital examination of the uterus from the vagina, the patient is usually placed on the side. It is sometimes necessary in cases of suspected pregnancy, e.g., to examine the patient in the standing position, in order to detect more readily increase in the size and weight of the uterus, the presence of ballottement, &c. In the case of unmarried women, with an unruptured hymen, digital examination of the uterus should be performed with care. The cases are very few in which obstruction to digital examination of the uterus due to this cause is present. The finger may generally be introduced a sufficient distance to reach the os uteri, by exercising gentle and continuous pressure, if this mode of examination be considered absolutely necessary: distension thus effected is not permanent. Very valuable information can be procured as to the general shape and position of the uterus by digital examination of it through the rectum, the septum between the rectum and vagina being so thin that the practised touch readily defines the uterus in this manner. Thus the hymen may be entirely avoided.

Normal position of the Uterus.—Normally, the length of the forefinger represents the distance of the os uteri from the vaginal outlet, that is to say, if the patient under examination be lying on the side or back. If the patient be examined in the standing position, the uterus falls lower, and will be reached more easily by the exploring finger. When, however, the uterus is lower than usual, this distance is diminished. Prolapsus is constituted by this descent of the uterus.

Fig. 10.



The annexed drawing exhibits what I believe to be the normal position of the uterus with the patient lying on the side in the ordinary position for examination, the uterus being supposed to be that of a woman who has had children. The direction of the canal of the uterus somewhat varies in different individuals. Tested by the repeated use of the uterine sound, the most ordinary position is that here indicated. The drawing, a little altered in accordance with this view of the matter, in other respects closely follows a good delineation given by Kohlrausch. The measurements of the pelvis, the concavity of the sacrum, &c., are very carefully reduced from a plan which I have been at considerable pains to

render exact. The fundus of the uterus inclines more backwards (as here represented) in women who have had children than in virgins.

The position of the uterus is liable to considerable alteration. The following conditions may cause an *unusually low position of the uterus*, and therefore of the os uteri, in the vagina:—

During the first three months of *pregnancy*, the effect of the progressive enlargement of the uterus is to give the organ an apparently lower position in the pelvis than usual; thus, in a case in which the menses have been absent two or three months, and the texture of the cervix itself is softer than usual, the fact that the uterus is lower than usual would tend to strengthen the suspicion of pregnancy. The fact is the more important as after about the third month of pregnancy the uterus is higher than usual in the pelvis. In *retroversion or retroflexion of the uterus*, also, the uterus as a whole is generally lower down than usual. *Chronic enlargement, hypertrophy of the uterus*, enlargement due to *cancer of the uterus*, or any circumstance capable of increasing the bulk of the organ, gives the uterus a lower position than ordinary. Many of the cases of prolapsus (so-called) are really cases of this kind. *Fibrous tumours of the uterus*, when small, cause a descent of the organ. In cases of large fibrous tumours of the uterus, the effect is usually precisely the reverse. *Ovarian tumours*, when small, and especially when they appear to be impacted behind the uterus in the retro-uterine fossa, push down the uterus. The opposite effect results, as a rule, when these tumours are large and leave the pelvis for the abdomen. In *ascites*, the distension of the abdomen and pelvis by fluid pushes the uterus lower than usual. *Distension of the bladder*, owing to retention of urine, may have the same effect. Violent, continued, *straining efforts*, attended on coughing, difficult defæcation, and the like, may have the effect of producing prolapsus of the uterus.

On the other hand, the position of the uterus may be *unusually high*. Thus, in *pregnancy advanced beyond the third month*, the uterus, now become too large to remain conveniently in the pelvis, mounts up, partially or entirely, into the cavity of the abdomen. The position of the cervix is peculiar; it is tilted backwards and upwards towards the promontory of the sacrum; the later the pregnancy has advanced, the higher is the os found to be placed. *Considerable enlargement of the uterus from any other cause, fibrous or other tumours of large size, distension of*

the uterus by blood, serous fluid, air, &c. In these cases also, the uterus leaves the pelvis and the cervix is reached with difficulty. The cervix may, in cases of fibrous tumour, be twisted more or less to one side, and otherwise altered. The uterus is generally, but by no means always, drawn up by *ovarian tumours of large size* out of the pelvis, and it is at the same time dislocated more or less to one side.

Mobility of the uterus.—Normally, the uterus enjoys a certain degree of mobility. The vaginal part of the cervix, when pushed by the finger, is moved with ease to one or the other side, or upwards and downwards to a limited extent, the body of the uterus evidently moving with it. The presence of this mobility is very important in the diagnosis of *cancer of the uterus.* When this disease is present, the mobility alluded to is ordinarily lost, or at all events diminished, at a comparatively early period; the cervix is not readily moved in one or the other direction. There may be loss of mobility of the uterus, also, in cases of *ovarian tumour*, and, indeed, in all cases where *tumours of considerable size occupy the pelvis*, e. g. fibrous tumours of the uterus, perituterine hæmatocele, &c.; but these cases are readily distinguished from cancer of the uterus, by paying attention to the following criteria. The loss of mobility in cases of uterine cancer is due chiefly to the thickening, induration, and disposition of morbid products in the cellular tissue, situated at the junction of the cervix and the vagina. There is often considerable puckering and contraction of the vagina at its junction with the cervix in cases of cancer, and by the extension of the disease, the uterus becomes, in advanced cases, fixed, and the vagina with it. Loss of mobility is a sign which, though quite valueless taken by itself, is of essential importance when observed in association with other signs, as diagnostic of cancer, as will be elsewhere fully explained.

Excessive mobility accompanies cases of prolapsus.

DOUBLE EXAMINATION OF THE UTERUS.

A method of examination which is often of exceeding value in affording exact conclusions as to the state of the uterus, its shape, &c., consists in a simultaneous use of the two hands.

There are two methods which may be pursued: 1. To introduce the forefinger of one hand into the rectum, and to apply two fingers of the other hand over the hypogastric region. The patient

should be placed either on the side or laid flat on the back. It is obvious that under these circumstances (the abdominal parietes being lax and non-resistant) important information can be obtained as to the shape and size of the uterus. This method of examination can be readily carried out, and in cases where it is not considered desirable to rupture or injure the hymen offers a ready and decisive means of ascertaining the condition of the uterus. Also, in cases when the uterus is absent or very imperfectly developed, the fact can thus be promptly demonstrated.

2. Or, the forefinger of one hand may be passed into the vagina, and the fingers of the other hand applied above the pubes. In this manner the existence of tumours in front of the uterus may be promptly ascertained and their shape defined.

DIGITAL EXAMINATION OF THE OS UTERI AND OF THE VAGINAL PART OF THE CERVIX UTERI.

Much importance is very justly attached in a diagnostic point of view to the condition of the os uteri. The size of the orifice, its shape, the hardness or softness of the lips of the os and of the adjacent structures of the vaginal portion of the uterus, are all open to considerable variation, and upon these variations conclusions may be very safely based as to the nature of the pathological or physiological alterations present. The subject of the pathology of the os and cervix uteri must be studied before undertaking an examination, either digitally or with the aid of the speculum.

To appreciate the various changes which are liable to occur in the condition of the lower part of the uterus a knowledge of the normal condition and relations of the parts is essential. The finger must be educated and accustomed to associate a particular sensation with a corresponding condition: an observer with an educated finger will be thus enabled to draw conclusions wholly unattainable by an inexperienced person. In the words of Gooch, 'the finger soon gains the power of feeling when the mind has 'acquired the knowledge of what to feel for.'

As preliminary to the discussion of this subject, some account of the normal condition of the os and cervix uteri is necessary.

'In the virgin and unimpregnated condition of the uterus,' says Dr. Montgomery, 'its mouth and the lower section of its 'neck, when examined by the finger introduced into the vagina, 'can be felt, as it were, projecting into that cavity from a quarter

'to half an inch. The part so projecting feels remarkably firm, 'is slightly tapering or conical in form, and about as large as the 'end of a man's thumb; having, in its termination in the vagina, 'a transverse opening whose lips or margins feel firm and well 'defined. This may be so far open as to allow the extremity of 'the finger to be insinuated to the depth of an eighth or a quarter 'of an inch, sometimes a little more, sometimes not so much; or 'it may merely communicate a sensation of a slight depression 'almost without a cavity, such as is felt when the tip of the finger 'is pressed between the lateral cartilages, at the extremity of the 'nose. Sometimes the os uteri differs very considerably from this 'description, being almost imperceptible from its diminutive size, 'and perfectly circular, and it is not very rare [here I do not agree 'with Dr. Montgomery. Such a condition is very rare in the 'virgin] to find it opening at once from the upper extremity of 'the vagina without any projection of the cervix uteri into that 'canal, which to the finger seems to taper gradually to a point, 'and there terminate in the orifice of the womb, the margins of 'which are very indistinctly felt. . . . Once a woman has borne 'children, or sometimes even one child, the conditions of the 'uterus are liable to be altered in several appreciable circum-'stances. The whole organ is apt to remain permanently larger 'than it was originally, and the cervix partaking of this change, is 'found broader, less prominent, and less firm in texture, while its 'shape is sometimes the reverse of that noticed in the virgin or 'nullipare, being indeed somewhat conical, but having the base of 'the cone downward instead of above; under the same circum-'stances the os is found of greater dimensions, and its opening 'much more distinctly transverse, admitting more readily the 'introduction of the end of the finger, and not unfrequently 'having its circumference or margins uneven, perhaps fissured, 'and giving the sensation of being a little lobulated.'*

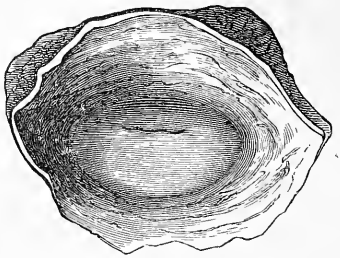
The annexed drawing, copied from one by Dr. Farre (see fig. 11), represents the orifice as having a transverse shape. The transverse length of the orifice as here shown is, I believe, greater than it is found to be in the virgin os in the majority of cases.

Method to be pursued.—For all ordinary purposes in making a digital examination of the os uteri the patient may be placed lying on the left side close to the edge of the couch or bed, with the trunk so placed that the head is towards the middle of the couch. The knees should be drawn well up towards the chin.

* *Op. cit.* p. 170.

The finger, well oiled, is then introduced into the vagina, the guide to the orifice being the great trochanter; for it will be

Fig. 11.



found that in the foregoing position the left hand being laid on the great trochanter the orifice of the vagina is immediately beneath it. A knowledge of this fact will be found useful in facilitating the necessary examination.

It will be borne in mind that under *ordinary* circumstances the finger passes about the distance of an inch before reaching the position of the hymen, where the true vaginal canal really begins, and the whole of the forefinger must be introduced before the os uteri is reached. Where the person is very stout the difficulty of reaching the os uteri by the forefinger is often considerable, and unless the knees are well drawn up it may be well-nigh impracticable.

Under some circumstances the patient is made to stand upright during the examination, but in this country the method in question is not often adopted.

The changes produced by pregnancy will be presently described more particularly. The above remarks apply only to the uterus in the non-gravid condition.

On examination it may be found that the uterus is *altogether wanting* (see chapter on Uterine Malformations). The vaginal part of the cervix, as already remarked, is generally shortened in women who have had children; in some cases it almost entirely disappears. It occasionally happens that in such cases the *os uteri becomes occluded*, and no opening can be found. Cases have been recorded of women who were pregnant, and in whom this occlusion had occurred apparently soon after conception, an incision in the lower part of the uterus having been ren-

dered necessary in order to effect delivery. It may be, then, that the os uteri is not to be felt because it has become occluded in the above manner; but the signs of pregnancy would under such circumstances be observed: or it may be that the *os is situated unusually high*, and is not readily reached, as is the case more or less in the last month or two of *pregnancy*: there the presence of pregnancy should suggest the explanation. Or the *vagina may have become narrowed and constricted* by inflammatory adhesions (after a difficult labour), and the vagina may appear to terminate lower down than is really the case. *Abnormities of the hymen* may lead to a like erroneous inference.

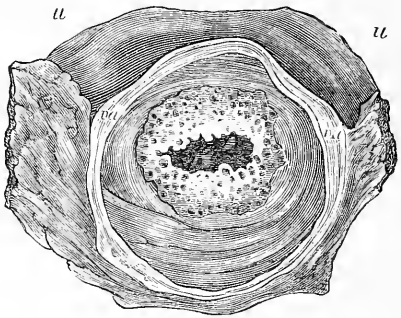
In *retroversion of the gravid uterus* the os uteri and the cervix uteri are often dragged up so high behind the pubic symphysis that no os can be felt. The same result may occur when *large tumours*, fibroid, ovarian, &c., occupy the pelvis. In cases of pregnancy, tumour, &c., dragging the os out of its place and so preventing its being felt by the finger, the pelvic tumour is so large that the explanation of the apparent absence of the os would be obvious.

Softness of the lips of the os uteri.—The physical conditions of the os uteri described as 'hardness' or 'softness' are perhaps the most important to which attention can be directed. Normally, the textures of the os, under which term we may conveniently include the parts surrounding the aperture, are, in the virgin, firm and resistant, and a peculiar impression is conveyed to the finger hardly to be described in words. This is to be considered as its typical physical condition, and it is necessary to be familiar with it in order to be able to detect the variations from the healthy state.

Pregnancy.—Unusual softness of the os uteri and of its vaginal part is one of the signs of pregnancy, and, as such, deserves special and particular mention in this place. It is a peculiar kind of softness, giving the sensation of a soft texture overlying a harder one, and imparting a cushiony elastic feel, quite characteristic. It has been well compared to the sensation given to the finger when pressed into the glans penis in a state of erection. The surface of the lips of the os are at the same time, in primiparæ, smooth and uniform; in multiparæ there may be fissures giving the lips a slightly lobulated arrangement. As regards the period of pregnancy at which this peculiar softness is observed, it is present during the second month pretty distinctly, but not so distinctly at this early period in primiparæ as in

women who have already borne children. At the end of the third or the fourth month, however, the softness of the os uteri is very distinctly present in most cases, and, what is very important, the softness becomes associated at about the fifth month, and subsequently, with a peculiar shotty feel, arising from the muciparous glands around the os uteri becoming enlarged. Moreover, the softness becomes intensified as pregnancy advances: in many cases I have found the lips in an almost spongy condition, from extreme softness, near the end of pregnancy. The existence of this softness, and of the other physical changes, in the vaginal portion, forms a very strong presumption in favour of the presence of pregnancy. This is well shown in fig. 12 from a

Fig. 12.



drawing by Dr. Farre. The softness alone, or a condition which at all events closely simulates it, is observed under other circumstances than pregnancy. The menstrual nisus is attended with a certain degree of softness of the part; but this could hardly mislead the observer if care were taken to make a second examination after the interval of a fortnight from the date of the first. Distension of the uterus, owing to the presence of fluid, a large polypus, hydatidiform degeneration of the ovum, may, each or either of them, give rise also to softening and fulness of the os in some degree simulating that due to pregnancy. In cancer of the cervix uteri there may be softness due to the presence of fungous growths, having a soft consistence, but in this case there is also *irregularity* of the surface.

When the uterus is inflamed and congested, the os and vaginal portion may become swollen, puffy, and softer than usual; but the parts in question are somewhat more painful to the touch; the softness, moreover, is never extreme.

As Montgomery observes, this softness of the os is most reliable from a negative point of view; thus, if the patient were supposed to be five months advanced in pregnancy, the absence of the softening would be strongly against such a supposition. This statement does not hold good in cases of cancer of the cervix uteri; in such cases there might be an absence of softness, and the patient might yet be pregnant. In ordinary cases, however, the presence or absence of this softening of the os and vaginal portion is extremely valuable from a diagnostic point of view.

Softness of the os is observed in cases of cauliflower excrescence of the os uteri. The softness due to this cause is, however, associated with a lobular enlarged condition of the lips and margins of the os uteri, eminently characteristic of the affection. In the very early stage of this affection, however, when the lips of the os are not much enlarged, this softness might, by a beginner, be possibly mistaken for that due to pregnancy.

Hardness cannot be said to be diagnostic *per se* of any particular disease of the uterus. Normally, the degree of hardness presented to the touch is considerable, and if the shape and size of the os and of the vaginal portion be not altered, the hardness alone is not significant. It would, however, enable us to decide against the presence of pregnancy in a case supposed on other grounds to have gone as far as the fourth or fifth month. Conjoined with *other* physical changes in the vaginal portion, irregularity, hypertrophy, &c. (see chapters on Cancer of the Uterus, Fibroid Tumour, &c.), it may become positively significative of other important conditions.

The os uteri is occasionally found to convey to the touch an impression as if hard rounded masses like shot, of variable size, were embedded in it. These bodies are the follicular glands of the part distended with accumulated secretion. It has been already mentioned that during pregnancy rounded bodies are usually found to be present in the substance of the os, and there seems to be an identity between the bodies in question and those occasionally met with in this portion under other circumstances, which may attain a larger size, and which have been termed by several writers *Ovula Nabothi.** And in cases, to be more particularly referred to subsequently, where small cysts are found growing from the os, these cysts appear to have a like origin.

Size of the os uteri.—In the virgin, the uterus being healthy,

* Some remarks on the nature of these bodies will be found in Dr. Tyler Smith's work *On Leucorrhœa*, p. 143.

the aperture is large enough to be just perceived by the touch. In the pregnant uterus the orifice enlarges, and at the fifth month is nearly large enough to admit the point of the finger. In the latter case, this enlargement of the orifice is associated with softening of the lips of the os, with the presence of the muciparous glands, uterine tumour, &c. When the orifice is so large as to admit the finger, softness being absent, this increase in size may be dependent on one of the several following conditions:—In cases of large fibrous tumours of the uterus encroaching on the cavity, the lips are separated to a considerable extent, but they are hard and firm. Such is also more usually the case where polypus of the uterus of large size is present. The separation of the lips occurs earlier in polypus than in cases of fibrous tumour.

The os is also widely open in cases of enlargement of the uterus due to deficient involution of the organ after delivery. In women who have been recently delivered an open condition of the os is necessarily present, and this condition of the os is a very valuable sign in cases where evidence of recent delivery is required for medico-legal purposes. Under such circumstances, also, the condition of the os uteri is in other respects peculiar. It is soft, flabby, and relaxed. The open condition of the os gradually diminishes after labour, so that after two or three weeks the sign is no longer useful: in cases where abortion has occurred, the open state of the os after delivery is less marked, and it is a less decisive test than when delivery has taken place at full term.* The subsequent *progressive closure* of the os is a valuable diagnostic sign in these cases. (See also 'Examination by the Sound.')

An open condition of the os is found, often to a marked extent, in cases where the uterus is enlarged from the presence of chronic inflammation or congestion. In cases of leucorrhœa connected with an increased action of the numerous glands of the cervix uteri, the os is open more widely than usual. In cases of cancer of the uterus, the aperture is often much larger than it should be, and the first stage of this disease has in this respect a great similarity to other conditions of less serious import. But in cases of cancer of the os uteri, the opening has lost its symmetrical shape; there is, moreover, irregularity, of a kind to be particularly described presently.

On the other hand, the *opening of the os may be too small*, or altogether wanting. If there be any reason to suspect that either

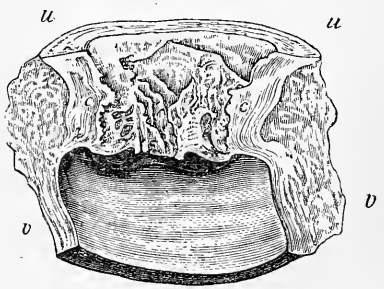
* A most valuable chapter *On the Signs of Delivery* will be found in Montgomery's work, *jam cit.* p. 573.

of these conditions be present, as in cases of sterility, dysmenorrhœa, &c. &c., it will be necessary to resort to another method of examination, and to use the uterine sound as a probe. (See 'Examination by Sound.')

Length of the vaginal Portion.—Variations in respect to the vaginal portion of the cervix are important from a diagnostic point of view. In *pregnancy* there is a diminution in the length of the vaginal portion, the nature and degree of which must be now explained. In the first place, it is a mistake to suppose that there is always a perfect regularity in the degree to which the abbreviation of the vaginal portion proceeds at the same period of pregnancy in all instances; in the second place, it must be recollected that comparative, not positive, measurements are only to be relied on. In order that we may draw correct conclusions in particular cases, it is necessary to be aware of the normal length of the vaginal portion in the case before us; after repeated pregnancies, the portion of the cervix projecting into the vagina becomes shorter and shorter. Normally, the vaginal portion begins to be reduced in length about the fourth month of pregnancy, and as pregnancy advances the shortening also progresses, until at full term the whole, or very nearly the whole, of the vaginal portion has been drawn up out of the vagina. The length of the cervix itself is very little altered during pregnancy; the apparent shortening is due to drawing up of the cervix out of the vagina, which process has the effect of reducing the length of the vaginal portion.* Fig. 13, copied from Dr. Farre's drawing, shows the extent to which the abbreviation of the vaginal portion proceeds at the eighth month of pregnancy.

This shortening becomes useful as diagnostic of pregnancy when the patient is under observation for some months, and it can be ascertained from time to time that a *progressive* shortening i actually taking place. If the other signs present be not against pregnancy, this is one of the strongest proofs in its favour. Enlargement of the uterus and softening of the os uteri would under such circumstances be associated with it. The vaginal portion may be found

Fig. 13.



* Dr. Matthews Duncan first forcibly drew attention to this important fact.

actually shortened from several other causes—previous pregnancies, dislocation of uterus upwards by ovarian tumours, distension of uterus by large polypus or by fluid, as in cases of hydrometra, also from dragging of the uterus upwards by large fibrous tumours of the uterus. In cases of extra-urine pregnancy the shortening is wanting. (Kiwisch.)

EXAMINATION OF THE UTERUS BY MEANS OF THE SOUND.

'It is possible,' says Sir J. Simpson, through whom, in this country at least, the use of the instrument became known, 'by the use of a uterine sound or bougie introduced into the uterine cavity, to ascertain the exact position and direction of the body and fundus of that organ; to bring these higher parts of the uterus, in most instances, within the reach of tactile examination; and to ascertain various important circumstances regarding the os, cavity, lining membrane, and walls of the viscus.'

The sound itself is a slender rod of flexible metal, terminated by a slight knob at one end and by a flat handle at the other. It is graduated in inches, and at $2\frac{1}{2}$ inches from the bulbed end it is customary to place a slight projection. The instrument is very slightly curved at this point. The bulbed extremity has a diameter of one-eighth of an inch. A second instrument provided with a much smaller bulbed extremity is sometimes useful.

This instrument must never be used without a previous digital examination, and there are circumstances under which the uterine sound is not to be used at all—that is to say, where there is the slightest reason for suspecting that the patient is pregnant. The introduction of the sound into the uterus under these circumstances would almost inevitably occasion miscarriage or abortion. In cases where the patient is the subject of amenorrhœa, this caution is particularly appropriate; for during the early months of pregnancy she is sometimes unaware of her condition, or desirous of concealing the fact when known to her. Under such circumstances, the sign on which it is customary to place most reliance in deciding as to the propriety or not of using the sound is the presence or absence of *softness* of the vaginal portion of the cervix and of the edges of the os uteri; and, where the softness in question is detected, to refrain from using, or at all events to postpone the use of, the instrument until the nature of the case is made more evident in other ways. As it must be admitted, however, that the

presence or absence of this sign is by no means a positively sure criterion, unless perhaps in very experienced hands, it will not be safe to rely exclusively upon it: it will be better in a case where there is the slightest doubt to be on the safe side.

Another caution is required. It is not so very uncommon for women to suffer from slight losses of blood at the beginning of pregnancy; such losses might be readily taken to be evidence of menstruation, and the sound might in such cases be injuriously used.

It has occasionally happened that the sound has been introduced into the pregnant uterus, and no evil result has followed. It is thus shown that the instrument may pass into the decidual cavity between the decidua uterina and decidua reflexa without *necessarily* inducing abortion.

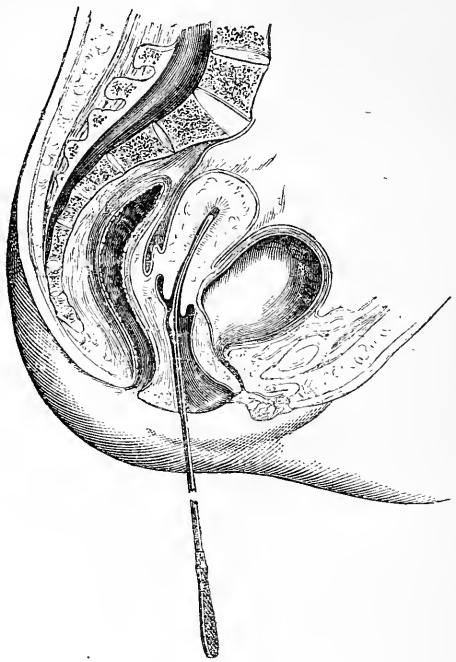
As a general rule, patients experience no inconvenience from the use of the sound, if it be carefully introduced; but in a few cases the passage of the instrument gives great pain, and its use should not then be persevered in.

Method of Introduction.—The patient is conveniently placed for the use of the sound, either lying on the left side close to the edge of a high couch or bed, or lying on the back: as a general rule, the former position is preferable. The forefinger of the right hand is first introduced into the vagina, and the tip of the finger brought into contact with the os uteri. The uterine sound, previously warmed and oiled, is then lightly grasped by the left hand, and the point of the instrument carried slowly towards the os uteri, the forefinger of the right hand being made use of as a director. If these directions be well attended to, the point of the instrument is readily made to hit the orifice through which it is desired to pass the instrument. When the point of the instrument is engaged in the os uteri, the first part of the operation is completed.

The passage of the sound through the canal of the cervix and into the cavity of the body of the uterus requires very careful management, and occasionally is only to be accomplished by those possessed of considerable dexterity. It is imperatively necessary to bear in mind that the introduction of the sound should be accomplished without using the smallest degree of force; resistance encountered is not to be overcome in this manner. Ordinarily, if the operator has introduced the sound in the proper direction, the curvature of the instrument and the curvature and direction of the canal being identical, the instrument is easily made to pass

upwards until the knobbed extremity reaches the fundus uteri. Normally, the canal of the uterus passes at first upwards in

Fig. 14.*



the direction of the pelvic axis,† but higher up there is a slight inclination forwards. This slight inclination forwards is usually sufficiently provided for by the curve given to the sound. If the uterus be of the average size, the instrument can be introduced $2\frac{1}{2}$ inches beyond the os uteri, and the projecting elevation on the convex side of the curve of the sound is felt by the forefinger to coincide with the os uteri. When the sound has been introduced a couple of inches, greater care is required in

* Fig. 14 represents the sound completely introduced, the position of the uterus normal.

† The question as to what is the normal direction of the uterine canal has excited much discussion. I believe that, as stated in the text, it is gently curved, the direction closely approaching that of a line passing successively through the axes of the brim and of the cavity of the pelvis. Dr. Meadows, who has written a careful criticism on this subject (*Lancet*, 1868, Vol. II., p. 71), believes that the canal is 'straight throughout its course, its axis being identical with that of the pelvic brim or inlet.'

pushing it onward. It occasionally happens that the tissue of the uterus is diseased, and so soft that an instrument such as the uterine sound may be driven through the fundus by the exercise of force not very great in amount. The advisability of avoiding all risk of such an accident need not be enlarged upon.

The sound is sometimes used through the speculum. It is far preferable, however, to introduce the sound in the manner above described; I believe that there is far more risk of doing injury to the uterus when the sound is used in conjunction with the speculum.

Supposing that an impediment is encountered to the introduction of the instrument, this may proceed from one of the following causes:

The point of the instrument is not directed in the axis of the canal. This is the most common cause of difficulty, and it is one which is only to be got over by practice. It is often necessary to withdraw the instrument and bend it so as to give it a different curve. If the actual direction of the vaginal portion of the cervix be previously ascertained by digital examination, this difficulty is less likely to occur.

The os is not pervious to the instrument. This is a cause of difficulty which is generally anticipated by digital examination, for the practised touch easily recognises the presence or absence of the depression and opening of the os uteri. In cases where the finger fails to find an aperture, it is necessary to have recourse to the speculum, in order to ascertain by actual inspection of the part whether a minute opening can be detected. The absence of an opening is rare; such a condition is, in most instances, a congenital one, and the patient has never menstruated. In a few cases, however, the os becomes sealed up, no trace of its existence being observed, in women who have had children, and also, rarely, in women who have been subjected to operations the nature of which is such as to lead to contraction of the tissues around the os uteri.

Contraction of the canal of the Cervix.—When the instrument is engaged in the canal, its further passage may be prevented by contraction of the canal itself. It is not very common to meet with an obstruction to the passage of the instrument, from this cause at least, lower down than 1 inch or $1\frac{1}{2}$ inch from the os uteri, although the occasional existence of contraction at this point, congenital or acquired, is not to be denied. The cavity of the cervix uteri is tolerably capacious, but at its superior termination—the *internal os*—the canal is ordinarily narrowed; and in

the nulliparous uterus it is customary to find that when the instrument reaches the point of junction of the cavity of the cervix and the cavity of the body of the uterus, there is a slight resistance. The nature and kind of resistance here alluded to will be better understood by reference to fig. 15, copied from an exceedingly accurate drawing by Dr. A. Farre. It represents a section of the uterine cavity, and the extent and direction of the cervical canal. In women who have had children, however, this kind of difficulty no longer exists. Without exercising anything like forcible pressure, this ordinary resistance, as it may be termed, is readily got over. It requires care to discriminate between contraction and those other conditions which may impede the progress of the instrument, next to be alluded to.

Fig. 15.

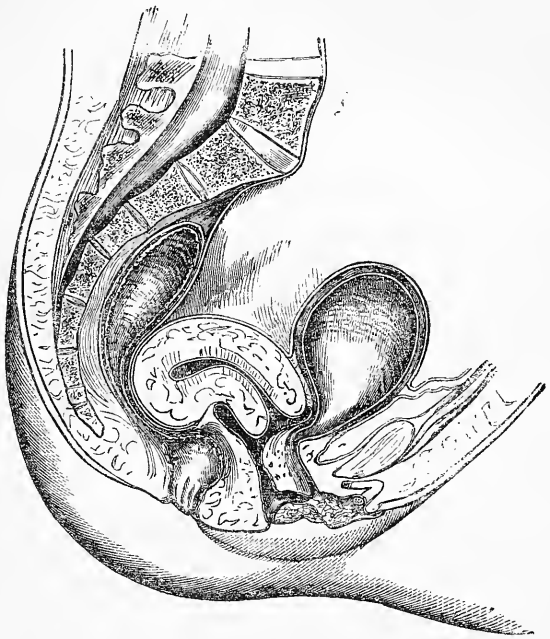
The point of the instrument may become engaged in one of the lacunæ or depressions of the cervix uteri and its further progress arrested thereby. This is one of the most common causes of difficulty in introducing the uterine sound. By gently withdrawing the instrument and again introducing it, at the same time slightly altering the direction in which it is pointed, this kind of difficulty will be readily overcome.

The point of the instrument may be arrested by the *existence of curvature or distortion of the canal of the uterus.* When the uterus is bent backwards (retroflexion) or forwards (anteflexion), the instrument is stopped abruptly at the seat of the flexure. When the resistance met with is due to retroflexion, a tumour may be felt behind the upper part and back of the vagina—the fundus uteri; and it is necessary, before introducing the sound, to turn it so that the concavity is directed not forwards, but backwards. With a little management, the sound then passes round the curved part of the uterine canal, and backwards into the centre of the fundus uteri. In like manner, in the case of anteflexion, the obstacle to the introduction of the sound is to be removed by giving the instrument a sharper curve forwards than usual, the concavity

in this case being directed anteriorly. Further remarks on the subject of the use of the sound when the uterus is flexed will be found in the Chapter on Flexions.

In cases when the sound does not readily pass, it is a good plan

Fig. 16.*



to use the speculum, to draw the anterior lip of the os down gently by means of a small tenaculum hook, and then to introduce the sound. The canal is thus drawn more nearly straight and the entry of the sound facilitated (see fig. 18).

In the use of the sound we have, of course, a very complete and easy method of measuring the *length of the cavity* of the uterus. These variations are themselves signs of great value in the diagnosis of uterine disease; the deductions to be drawn therefrom are now to be pointed out. Professor Simpson has, in one of his original memoirs on the uterine sound, so fully considered this branch of the subject as to leave little to be added. In the subsequent remarks, I have chiefly followed the account given in the memoir in question. The usual length of the uterine canal from

* Fig. 16 represents retroflexion of the uterus.

the os to the fundus is $2\frac{1}{2}$ inches, but a slight increase or a slight diminution of this measurement (e.g. to the extent of $\frac{1}{4}$ inch) is very frequently observed, and quite consistently with the uterus being in a healthy state.

THE LENGTH OF THE UTERINE CANAL GREATER THAN USUAL.

This may be caused by any one of the following conditions :—

Recent Delivery.—If the woman has had a child, the increased length may be due to a persistence of the hypertrophy with which the uterus is affected in consequence of pregnancy. After delivery the uterine cavity measures from six to eight inches, and this measurement is found gradually to diminish, until after six or eight weeks it resumes, under ordinary circumstances at least, its previous size. It is obvious that the uterine sound is capable of rendering valuable assistance in the diagnosis, in cases where it becomes a question as to the presence of 'signs of delivery.' For, on the one hand, where the patient was desirous of concealing the circumstance of her having been delivered, the sound would put us in possession of the fact of the uterus being larger and longer than usual—a condition the existence of which would have to be explained ; and, on the other, in a case where the patient was desirous of having it believed that delivery had recently occurred, nothing of the kind having in reality taken place, the sound would inform us that the cavity was of the normal length, and that therefore recent delivery of a child was impossible. The examination should follow the date of the supposed delivery pretty closely in order that the inference drawn from the premises alluded to may be of a decisive value. Further, the mere fact of the cavity of the uterus being considerably increased in length would not of itself be sufficient to justify us in stating that recent delivery had occurred: as will be explained immediately, the cavity of the uterus may be lengthened from other causes. In a woman who has within the last few months borne a child, and the cavity of whose uterus is longer than it should be, there is presumptive reason for suspecting that it is a case of defective involution of the organ after delivery.

Longitudinal hypertrophy of the uterus is another condition of the organ in which the sound passes inwards for a greater distance than usual. This species of hypertrophy occurs quite independently of pregnancy. For the most part the cervix of the uterus is the portion affected: this is lengthened out and

extended, whereas the cavity of the body of the uterus remains nearly as usual, or, at all events, participates but little in the change.

In many cases where the uterus is apparently prolapsed, the os uteri being very low down, this does not proceed from prolapsus of the whole organ, but from the presence of hypertrophy and elongation of the cervix alone, of that part of the cervix which is above the vagina. The sound, when used under these circumstances, is a most valuable means of diagnosis. In prolapsus constituted by hypertrophic elongation of the cervix, the sound can be made to pass upwards for a much greater distance than usual. Dr. Simpson mentions cases in which it passed inwards to a depth of four or five inches; and Huguier, whose observations are more recent and extensive, in the average of a large number of cases, found the length of the uterine canal to be $4\frac{3}{4}$ inches; in extreme cases, a length of 9 inches was attained. In many cases which I have examined, with the object of testing Huguier's statements, the results were such as to fully confirm their truth and accuracy. I have found the length of the uterine canal to amount to as much as $6\frac{1}{2}$ and 7 inches. There is a fallacy connected with the use of the sound in these cases, with which it is well to be acquainted, in order that an erroneous inference may not be drawn. The sound is sometimes arrested two inches or so from the os uteri, by the curve which the lengthened cervix uteri makes at this point, and in one instance I found it necessary to pass the finger into the rectum, when, by pressing against the convexity of the curve in question, the sound readily passed inwards between two and three inches further. We have two categories: (*a*) those in which the *cervical* cavity is lengthened and at the same time prolapsed; and (*b*) those in which the *uterine and the cervical cavity* are both lengthened, the os uteri remaining at or about its usual place, at the summit of the vaginal canal, or not remaining in this position. I have seen a case in which tumour of both ovaries was present, the upper part of the uterus was dragged up, and at the same time the lower part was pushed downwards. The canal of the uterus had an excessive length. (See 'Prolapsus.')

Fibrous tumours of the uterus frequently occasion a considerable increase in the size of the cavity of the organ—a circumstance rendered evident by the use of the sound. The size of the tumour may, however, be considerable, and the size of the uterine cavity remain unaffected. If the tumour be situated externally to the uterus— that is to say, if it grow beneath the peritoneum—it

may attain an enormous size without entailing any considerable alteration in the size of the cavity of the uterus. When the original seat of the tumour is, on the other hand, beneath the lining membrane of the uterus, the cavity of the uterus is constantly, or nearly so, increased in size, the increase being almost directly in proportion to the size of the tumour. When the fibrous tumour grows in the centre of the thickness of the uterine wall, the cavity is increased in size, but not to so great an extent as when it is situated nearer the lining membrane. The increase in the length of the uterine cavity due to the presence of fibrous tumour may reach to such an extent that the sound passes in to a depth of 6, 7, or 8 inches, a possible fallacy Sir J. Simpson calls attention to in connection with this subject. In long-standing cases it sometimes happens that the pressure produced by large fibrous tumours occasions the opposite sides of the uterine cavity to adhere, and the sound is arrested some distance below the real position of the fundus uteri.

The diagnosis between lengthening of the cavity caused by dragging of the fundus of the uterus upwards, and that caused by the presence of fibrous tumour in the walls of the uterus, turns on the relation which is found to subsist between the sound while in the uterus, and the tumour occupying the pelvis and projecting upwards in the hypogastric region. As a general rule, when an ovarian tumour is dragging the fundus uteri upwards, and thereby lengthening its cavity, the sound is found to be anterior to the tumour. To this rule there may be occasional exceptions; and when the tumour is situated laterally in reference to the sound, this means of distinguishing between the two is not available. When the tumour dragging up the uterus is extra-uterine, one side and corner of the uterus is generally more drawn up than the other: this gives the course of the sound upwards a certain obliquity, often characteristic.

Fibrous Polypus of the Uterus.—When the polypus remains within the cavity of the uterus, the length to which the sound can be introduced is increased in proportion to the size of the polypus. By means of the sound, a very perfect idea can sometimes be obtained of the relations and place of attachment of the polypus, for the point of the instrument can be made to travel round the included mass between it and the uterine walls. Care must be exercised not to fall into the error of taking the pedicle of the polypus for the summit of the uterus; it is possible for the point of the sound to be arrested at this point when first introduced.

Hypertrophy of the Uterus.—The increased length of the uterine cavity may be due to hypertrophy of the organ, a condition which is now and then found to be present, unassociated with any of the conditions causing lengthening of the cavity hitherto described. The lengthening which occurs in connection with this condition is never very considerable in amount, the measurement not generally exceeding $3\frac{1}{4}$ to $3\frac{1}{2}$ inches. This hypertrophy of the uterus, and consequent lengthening of the canal, may be due to chronic inflammation, to long-continued congestion of the uterus, repeated miscarriages, or to defective involution of the uterus persisting for a long time after delivery.

In *cancer of the fundus of the uterus*, the organ might be found unduly lengthened, without marked evidence of disease of the same kind at the cervix. In the very rare disease, *tubercle of the uterus*, elongation and increase in the size of the organ has been observed to be present.

Lastly, in cases of *undue patency of the Fallopian Tube*, the sound may pass to an unusual length. It is always necessary to examine carefully into the previous history of the patient, and to compare the results of examination by the sound with those derived from examination of the hypogastric region of the abdomen, and it is advisable to come to no conclusion until a combined examination by the sound internally, and by the hand placed over the hypogastrium, has been performed.

THE UTERINE CANAL IS SHORTER THAN USUAL.

When the depth to which the sound can be introduced is less than usual, this may proceed, following Sir J. Simpson's classification, from one of the following causes:—

Preternatural Shortness of the Organ generally, a congenital condition.—This congenital shortness of the canal is met with where the uterus is imperfectly developed, the whole organ being smaller than usual, or in cases in which the organ is unequally developed on the two sides. The condition of the external generative organs may be apparently quite normal, and the sexual instinct present to the usual degree, and yet there may be imperfect or defective development of the uterus itself. The uterus may be double, or one side only may be developed, or one side may be developed to a certain degree, and on the other side may be found a less fully developed cornu. These conditions are not

frequently met with in practice,* but the possibility of their occurrence must be kept in view, or the results of examination by the sound might prove embarrassing.

Stricture of the Uterine Canal, or partial Obliteration due to Pressure of Tumours, &c.—The apparent shortening of the canal due to stricture has been already alluded to in speaking of the difficulties attending the introduction of the sound. In old people the internal os uteri, which is the point at which the stricture, when present, usually exists, is often obliterated (Mayer, Matthews Duncan). The cavity of the uterus proper—that is to say, the portion above the internal os uteri—may also be obliterated, and the sound is then arrested at the same point. When the canal is obliterated by *pressure*, as by large fibrous tumours growing in the walls of the uterus, shortening of the canal may be a consequence.

Partial Inversion of the Uterus.—The shortening due to partial inversion could not possibly be mistaken for that due either to stricture or imperfect development of the uterus. In partial inversion, there is a tumour projecting from the os uteri ; the sound passes into the os uteri by the side of this tumour, but cannot be introduced so far as usual. Practical experience has shown that, in some cases, the diagnosis between partial inversion and polypus of the uterus is one of the extremest difficulty ; but with the aid of the data obtainable by a careful use of the uterine sound, we may hope to surmount this difficulty. The important diagnostic fact is, that the sound passes inwards to a less depth than usual on *all sides* of the projecting mass. If the case be one of polypus, the sound passes inwards to the usual extent, and the hand over the hypogastric region discovers the fundus of the uterus in its usual place. When polypus is *combined* with partial inversion the difficulty is greatly increased, and in such a case careful measurement of the depth of the cavity, examination of the tumour itself, examination *per rectum*, and of the hypogastric region, must all be brought to bear in forming a decision.

Atrophy of the uterus is in rare instances observed after labour ; here also the cavity of the uterus is found to be shorter than natural.

Lastly, the caution may be repeated, that flexion of the canal, causing arrestment of the progress of the instrument, *may* be confounded with actual shortening.

* For further information on this subject the reader is referred to the work of Kussmaul, *Von dem Mangel, der Verkümmerung und Verdopplung der Gebärmutter.* Wurzburg, 1858.

EXAMINATION OF THE OS UTERI BY MEANS OF THE SPECULUM.

By the use of the instrument known as the 'speculum,' we are able to obtain ocular evidence of the condition of that part of the uterus which projects into the vagina, and of the orifice or os uteri.

The speculum should never be used without a previous digital examination. The digital examination will be the means of informing us whether the state of the parts be such as to render it unadvisable or impossible to use this instrument. Further, a knowledge of the size, length, &c., of the vagina, ascertained by means of a digital examination, is necessary in order that the instrument selected may be adapted to the peculiarities of the case. The use of the speculum is objectionable in the case of young unmarried women, and more especially in those in whom the hymen is intact. For purposes of diagnosis the use of the instrument can but rarely be considered necessary under such circumstances. In cases of cancer of the uterus the instrument should be used with great care. Hæmorrhage of a serious character is often set up by careless employment of the speculum under these circumstances.

The cases in which the speculum is most commonly used for purposes of diagnosis are the following: Cases of obstinate leucorrhœa in which there is reason to suspect the presence of an abnormal condition of the cervix uteri and of the glands there situate; cases of menorrhagia, or recurring hæmorrhage, for the purpose of ascertaining the presence or absence of small polypoid growths within the os uteri, and which may be so small as not to be detected by digital examination; cases in which it is considered advisable to examine ocularly the condition of the portio vaginalis and os uteri, and thus of obtaining evidence as to the presence and nature of ulcerations, abrasions, excoriations, &c., of the parts in question. It is employed in cases in which it is considered advisable to explore the interior of the uterus itself, to facilitate, in some cases, the use of the uterine sound, and it is essential in the performance of some operations involving the cervix or os uteri.

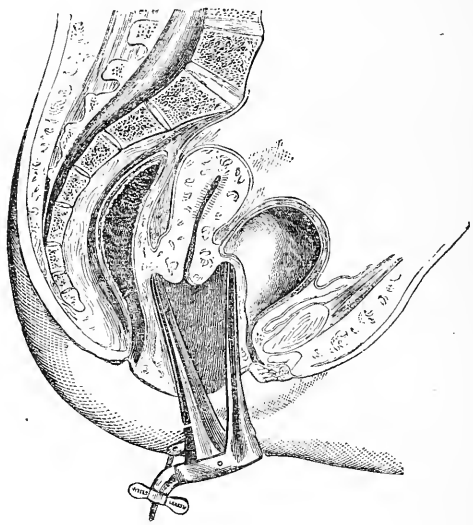
Method of using the Speculum.—The mechanical contrivances for getting a view of the os uteri are very numerous. Simple tubes, tubes slit up into two or three segments, and lastly the duckbill univalve instrument—known as Marion Sims's—have

been successively employed. It is needless to describe these various instruments in detail.

The two instruments which are, in my opinion, best adapted for the purpose are a short bivalve instrument (a modification of Cusco's speculum), and Sim's speculum.

Cusco's speculum I have used for some time, and in the Obstetrical Society's catalogue will be found a description

Fig. 17.



of one which I had constructed on this model, but a little larger at the mouth, and more portable. Messrs. Weiss have since improved the method of separating the blades, and it is now a very complete instrument (figs. 17 and 19). It has the advantage of bringing the os uteri near to the ostium vaginæ, a most important point, and the aperture or mouth being large ($1\frac{1}{2}$ in. by $1\frac{3}{5}$ in.) great facilities for operations are offered. Its length is only four inches. It is kept in place by its own action and requires no assistant.

In using this instrument, the patient should be placed on the side with the knees drawn up, and the hips, a little higher than the thorax, should be quite at the edge of the examining couch. The speculum, previously oiled and warmed, is introduced in the collapsed shape, and care taken to direct it backwards. The chief difficulty is at the ostium vaginæ, but this is overcome by

drawing the fourchette a little back with the forefinger of the left hand, and inserting the speculum just at first a little obliquely as regards the plane of the aperture. It should be passed as far as possible before screwing the blades open, and when the screw has been turned about three times it should be ascertained whether the os uteri is in view. It frequently happens that the speculum has now to be directed a little more backward, in order that the os may be brought into view. The further separation of the blades is then effected. When the vagina is very long and narrow this speculum does not answer quite so well, but if the vagina be dilatable it is of great service, for in separating the blades the os is brought down into view by a mechanism which will be sufficiently obvious. In cases where the ostium vaginæ is very narrow, a smaller-sized instrument of the same kind would be required; but under such circumstances the use of the speculum is not often required. In withdrawing the instrument it is best to allow the blades to collapse to within half an inch of each other, so as to prevent the vaginal walls being caught between them.

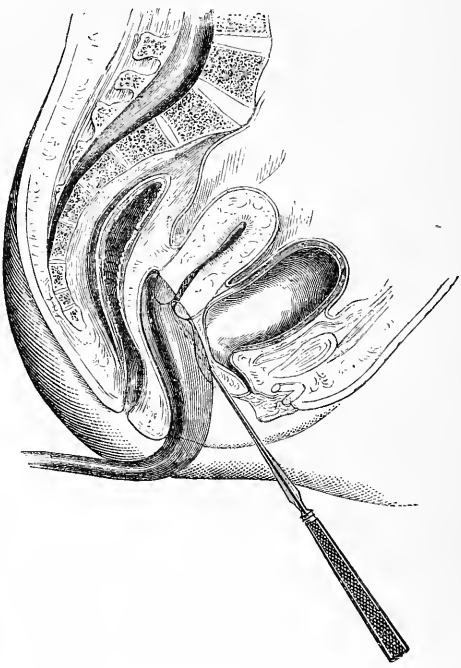
The drawing (fig. 17) shows the position of the instrument when introduced and the blades separated to an average extent ($1\frac{5}{8}$ inch). It will be observed that a good deal of the length of the instrument is expended on the vulva. A great merit of this instrument is that it expands the vulvar part of the canal.

Dr. Meadows has recently introduced what may be termed an improvement on this form of speculum, made by Mayer and Meltzer, two lateral additional blades being provided so as to separate the vaginal walls laterally. Further, the distal end is smaller, so that it is a little more easy of introduction than the one above described.

Another speculum is that of Dr. Marion Sims, and a most valuable one it is. It is kept in two sizes, giving thus the advantage of *four* blades, each of different width. This instrument requires the aid of an assistant. The patient must be placed in position as follows: Having been brought quite to the edge of the couch, which should be about the height of an ordinary table, she is laid on the side, and the knees drawn up to the abdomen. The left arm is then placed at full length behind the back. This throws the chest a little forwards. I have found it best also to raise the hips by means of a thin hard pillow or otherwise. The speculum is then introduced, care being taken to keep the point of the blade close to the posterior wall or floor of the vagina.

The larger or smaller blade is used according to circumstances. When the blade is in situ, the whole instrument is pulled backwards in such a manner that the whole of the floor of the vagina is pressed against the rectum. The perineum is thus stretched, and at one and the same moment the ostium vaginæ and the vaginal canal are dilated. The fundus of the uterus falls a little forwards in consequence of the position of the patient, and air of course enters the vagina. It is found that in some cases a perfect

Fig. 18.



view is now given of the os uteri. In others the bladder and anterior vaginal wall project backwards so as to impede the view, and when this happens the uterine sound or the finger must be used to push the projecting part aside, or, what is still better, a hook may be fixed into the anterior lip of the os and the uterus gently drawn down. Dr. Sims uses a small delicate tenaculum hook for this purpose. The one here figured (fig. 18), and which I have been in the habit of using, is a little firmer and stronger, and more bent back. It will be found that in drawing down the

uterus it is necessary simultaneously to draw the speculum a little in the same direction.

A short time since a self-retaining Sims' speculum was introduced in America. By the use of this instrument the aid of an assistant can be dispensed with. Both Mr. Spencer Wells and Dr. Savage have also introduced instruments constructed on the same principle.

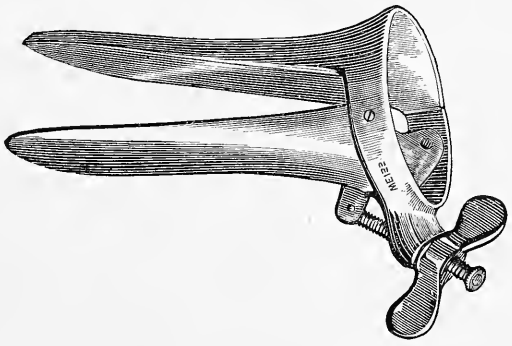
The view thus afforded of the os and cervix uteri is exceedingly good. Manipulations on the parts in question are effected with extreme facility. The use of the hook is not attended with any bad result, but when the patient is straining, as not unfrequently happens during the exhibition of chloroform, care is required so as not to lacerate the parts.

Fig. 18 represents the large blade in situ, as when first introduced. The hook having been inserted is drawn down about an inch in the direction of the vulvar aperture bringing the os uteri with it.

In some cases the bivalve instrument is better than the univalve; but where assistance is easily procurable the latter will be generally preferred.

The new bivalve instrument (fig. 19), still further improved as

Fig. 19.



above described, is so superior to the older instruments, that I do not describe them. The tubular glass speculum—known as Ferguson's speculum—is also very inferior to it.

In a few instances, as when the speculum is used to explore the condition of the vesico-vaginal septum in cases of fistulæ, it is advisable to place the patient on her hands and knees, so as to give the observer a good view of the roof of the vagina. The univalve speculum is the best to use in this class of cases.

The bivalve speculum may be used with the patient in the lithotomy position, but the other plan is far preferable. It is generally necessary, by means of a dossil of lint held at the extremity of a pair of long dressing forceps, to remove the secretions with which the surface of the exposed part is covered, in order that the mucous membrane itself may be inspected.

APPEARANCES OF THE OS UTERI OBSERVED BY THE SPECULUM.

The '*os uteri*' is the lower opening of the canal of the cervix. It is a round opening, occasionally, however, transverse in shape, bounded by two 'lips', an anterior and a posterior; the lips are smooth, uniform, and regular, when the woman has had no children, but the surface is more or less fissured, the os uteri being bounded by less regularly-formed lips in women who have had children. The virgin os uteri is, when normal, uniform, the vaginal portion regular and conical in shape; that of multiparæ is larger, irregular, and usually softer.

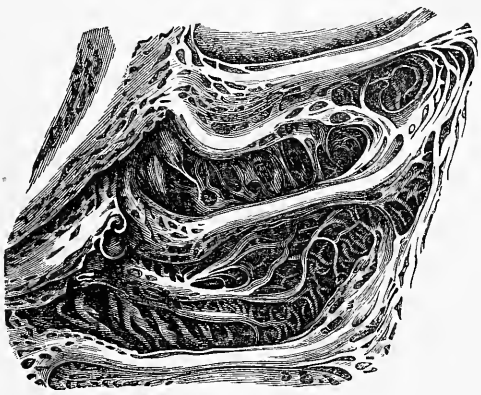
The appearances presented by the surface of the os uteri it is particularly important to bear in mind. The lips of the os uteri —that is to say the surface of these lips—present an appearance very different from that which is observed in the *interior* of the os uteri, and under ordinary circumstances the view obtained by the speculum is not simply that of the labia of the os, but of a portion of the interior of the cervix also. The surface of the interior of the cervix differs greatly in appearance from that presented by the surface of the labia, both in regard to the colour and in other essential particulars, and there is an abrupt line of demarcation always evident, and generally remarkably so, between the surface of the interior of the cervix and that of the labia of the os uteri.

The *lining of the cervix uteri*—the minute anatomy of which was first thoroughly described by Dr. Tyler Smith—is not smooth, but furrowed and plicated so as to present numerous depressions and elevations (see fig. 20), by which the amount of surface is very largely increased. The arrangement of two folds or plicæ varies in different cases. There are usually four prominent elevations longitudinally placed, and four columns of rugæ or folds of mucous membrane; and lateral transverse branches are given off from these, the whole thus acquiring a palmated aspect; and between these different elevations are seen others more minute. The whole surface thus presents a cribriform aspect. In the

recesses formed are the openings of multitudes of glandular crypts. The observer, under ordinary circumstances, sees the lower and a small portion only of the surface of the interior of the cervix.

Contrasting with the cribriform irregular surface just de-

Fig. 20.*



scribed, the labia of the os uteri present a smooth uniform mucous surface. The labia may themselves be lobulated, and thus irregular, but the surface itself is smooth and uniform. The epithelium covering the labia is of the squamous variety, identical with that lining the vagina, but *within the cervix* the epithelium changes, and the surface is covered by cylindrical epithelium. Higher up within the cervix, and therefore usually beyond observation by means of the speculum, the epithelium becomes ciliated.

The surface of the labia of the os uteri is covered by a somewhat thick layer of squamous epithelium, as already remarked. Beneath this epithelium is a fine basement membrane, and these two cover certain important structures—the *villi* or *papillæ*. These are long, single, or bifurcated, vascular bodies, sometimes so large as to be visible to the naked eye. They are rendered evident by macerating the cervix uteri in water, when, the epithelial covering becoming detached, the villi are seen forming an irregular fringe over the whole surface. *Within the*

* Fig. 20 is a magnified representation of the interior of the cervix uteri. (From Tyler Smith.)

cervix there are also villi of a somewhat analogous character, but not bound down and hidden by epithelium as in the other position, and the villi are three or four times larger; they contain in both situations looped blood-vessels. The interior of the cervix further differs from the labia of the os uteri in being provided with an enormous number of mucous crypts capable of pouring out secretion in large quantity, whereas there appears to be an almost entire absence of these glandular organs in the mucous membrane covering the labia.

Thus, if the whole of the epithelial covering were removed from the surface of the labia of the os uteri there would be presented to the eye a bright red, somewhat irregular, surface constituted by the free extremities of the villi in question. An appearance somewhat similar to this is normally presented, in the cavity of the cervix by the villi there situate, but in the latter position the cervix is more irregular, due to the large size of the villi, and of a deeper red, owing to their greater vascularity.

Almost every variety of change observed at the os uteri by means of the speculum has been termed 'ulceration;' but these 'ulcerations' turn out to be really something to which the term does not properly apply.

In the first place it appears that the mistake has often been committed of mistaking for an ulcer a simple *eversion of the lining of the cervix*. Dr. Farre* has pointed out this source of fallacy. His remarks on the subject are as follows:—'In the 'more common degree of hypertrophy with eversion, a crescentic 'protrusion only of the cervical lining occurs. The unevenness 'of the surface caused by the slightly swollen and prominent 'rugæ, and as often by the numerous little depressions consisting 'of enlarged mucous crypts, according as one or the other of these 'is the predominant normal structure in the cervix, gives to the 'part during life the appearance of a raw and granular surface, 'while the natural boundary between the lower edges of the cer- 'vical canal and the lips of the os tincæ being now transferred on 'to the latter in consequence of this eversion, an abrupt semi- 'circular line becomes visible, which while it only indicates the 'natural termination here of the vaginal epithelium is frequently 'mistaken for the margin of an ulcer.' The stretching of the parts, which is sometimes produced by the mere introduction of the speculum, may give rise to this kind of eversion of the lining of the cervix, whenever the os uteri is a little lax and soft

* *Cycl. Anat. and Phys.*, article 'Uterus.'

and slightly open. The observer only requires to be warned of the error here alluded to, in order not to fall into it; by simply moving the speculum a little it will easily be made evident whether the dark or circumscribed spot be the everted lining of the cervix or not.

Many of the appearances and conditions of the uterine cervix to which the term ulceration has been applied, as Dr. Farre observes, 'when minutely examined and tested by the aid of the 'microscope, so little fulfil the conditions of true ulceration as to 'make it appear that such a term could only have been applied 'to them under, in some instances perhaps, a misapprehended, 'and in others a strained view of their real nature.'* Dr. Farre proposes, with the view of preventing further misconception on the subject, to adopt Sir James Paget's suggestion of 'regarding 'as abrasions or excoriations those conditions in which the epithe-'lium or epidermis of an inflamed part is alone removed, and 'those only as ulcerations in which the removal extends further to 'the vascular or proper tissues beneath the epidermis.' †

It has been maintained by some observers that ulcerations of the cervix uteri, of the 'fungous' variety, occur frequently during the early months of pregnancy, and often give rise to serious consequences. More extended observation has shown, however, that ulceration, or the condition described as such, of the cervix is to be regarded as a normal condition. Cazeaux‡ describes the appearances during the *latter* half (and his description agrees in essential particulars with that given by others during the *first* half) of pregnancy as follows: 'The walls of the cervical cavity 'are very unequal, and present an irregular series of fungous pro-'jections separated by more or less deep depressions. Some of 'these prominences are transparent, being probably due to hyper-'trophied follicles, but others resemble true flabby vegetations. 'Sometimes these are covered by a protective epithelium, but it 'is not unusual for them to be deprived of this, and then to 'bleed on the slightest touch. It is especially within the furrows 'which separate them that more or less deep linear ulcerations are 'often observed. These ulcerations sometimes so increase in size 'as to occupy a pretty considerable surface, and then they are 'easily seen; but generally they are hidden in the depths of the 'anfractuosities, and in order to perceive them, after well cleaning

* *Loc. cit.* p. 695. † *Ibid.* p.696.

‡ See *Mém. de la Société de Chirurgie de Paris*, t. iv.; also *Brit. and For. Med. Chir. Rev.*, July, 1858, p. 136.

'the surface, we must put the cervix on the stretch by opening the 'instrument widely.' Cazeaux has observed such ulcerations in seven-eighths of the cases he has examined. In a case of Fallopian pregnancy, fatal at two months of gestation, which came under my own notice, the hypertrophied fungous condition of the villi at the os uteri was very evident; the symmetrical and indeed beautiful appearance of the villi in question gave the idea of a physiological and not a pathological alteration of the parts in question.

Much might be said further on the fallacies of the 'ulceration' theory of uterine disease; but, in the present state of medical opinion, a serious controversy on the subject is hardly necessary.

We may now proceed to describe the lesions of surface which are observed at the os uteri.

Erosion of the os uteri.—One class of cases is that in which the epithelium covering the os uteri and adjacent part of the cervix is loosened and detached, leaving exposed the villi of the mucous membrane. The surface has a more or less bright red appearance, and is soft and velvety to the touch. When nitrate of silver is applied, the distinction between the abraded and the healthy surface is rendered very evident. It is accompanied generally by an unusual secretion from the glands of the cervix, and by a congested condition of the mucous membrane, and frequently of the tissues of the part generally.

Several varieties of erosions have been described by authors; thus an *aphthous* form is alluded to, in which the epithelium is raised in the form of little vesiculæ or bladders; other forms have been spoken of, and distinguished by names according to their fancied resemblance to eruptions on the skin. The various appearances presented would seem to be due rather to accidental circumstances than to fundamental differences.

Cases in which there is simply abrasion may be observed; but in many instances there is something more than loss of epithelium; the surface has in these cases an eaten, corroded appearance. The destruction of surface may be so trifling that it requires care to discover it, or it may be much more considerable, giving the surface an appearance of real ulceration. When the surface has been abraded for some time, it assumes a more or less *granular* appearance, and this is evident both to the eye and to the touch; and the greater part or the whole of the os uteri may in certain cases present a raw rough surface of a bright red or livid and

bluish colour. This condition of the surface may not improperly be spoken of as 'ulceration.'

True ulcerations of the vaginal portion of the cervix uteri are sometimes met with. They are generally associated with enlargement and hypertrophy of the cervix uteri, whatever may be the cause of that enlargement; or with those affections of the uterus usually classed under the term 'prolapsus uteri.' They are produced by the mechanical irritation to which the prolapsed cervix is exposed, and have all the characters of ordinary ulcerations.

Another form of ulceration of the os and cervix uteri, which is rare, is by some authors believed to be of cancerous nature, by others to be of *tuberculous* nature. Dr. West, in whose work * will be found a careful *résumé* of what has been said by different authorities on the subject, believes that these intractable ulcerations are instances of epithelial carcinoma; and he agrees with Robin in considering that this kind of ulcer is to the uterus what lupus or cancroid ulcers are to the face. There appears to be no reason, however, why both sides should not be right, or for denying that both tuberculous ulcers of chronic nature, and lupoid disease of the cervix uteri may be witnessed, though not of course in the same individual. It can very rarely happen that this question will arise practically for determination, these intractable ulcerations being very uncommon.

Syphilitic affections, ulcerations, &c., of the os and cervix uteri.—Concerning true chancre—primary syphilitic ulcer—of this part, there is but little difference of opinion. It is pretty well understood that it is very rare, although it has been observed. Chancre of the os or cervix uteri presents an appearance like that of chancre observed elsewhere; it is said that there is a greater disposition on the part of the ulcers here situated to bleed. The only conclusive evidence of the nature of the ulcer would be its reproduction by inoculation.

Respecting *secondary syphilitic* eruption, or ulceration of the os and cervix, there has been much discussion, nor is it at all settled how frequently ulceration is present in individuals affected with secondary syphilis. It does not appear that there is anything peculiar about the character of the ulcerations present in these cases, or which would enable us to say at once that such and such an appearance was due to syphilis. My own observations induce me to agree with Dr. Tyler Smith, who holds that 'in 'almost all cases in which leucorrhœa and disease of the os and

* *Op. cit.* p. 361

'cervix uteri are present in women suffering from constitutional 'syphilis, the uterine symptoms are a genuine manifestation of the 'constitutional or secondary disorders.'*

The diagnosis of secondary syphilitic ulceration of the os and cervix will be materially influenced by the presence or absence of a syphilitic history in the particular case, and before proceeding to form a decision on the point all the antecedents of the patient must be carefully scrutinised. The effects of anti-syphilitic remedies would frequently assist us in coming to a conclusion.

* *On Leucorrhœa*, p. 98.

CHAPTER V.

EXAMINATION AND DIAGNOSIS OF TUMOURS FELT THROUGH THE VAGINAL WALLS ON DIGITAL EXAMINATION: INCLUDING PELVIC TUMOURS OF VARIOUS KINDS.

Enumeration of Tumours felt through the Vaginal Walls, and Summary of the Diagnosis—Distension of the Bladder—Calculus of the Bladder—Distension of the Rectum by Fæces—Cancer of the Rectum—Retroversion and Retroflexion of the Unimpregnated Uterus—Retroversion and Retroflexion of the Gravid Uterus—Anteversion and Anteflexion of the Uterus—Fibroid Tumours growing from, and in, the posterior part of the Cervix Uteri, or from the Uterus itself—General Enlargement of the Uterus from whatever cause—Enlargement of Fallopian Tube, due to Distension by Serous or Purulent Fluid, by Blood, and Fallopian Pregnancy—Abdominal Pregnancy—Blood Tumours of the Pelvis (Peri-uterine Hæmatocele)—Ovarian Tumours; Diagnosis of the Smaller and of the Larger Ovarian Tumours from other Pelvic Tumours—Cysts of broad ligament (Wolffian Cysts)—Hydatid Cysts—Pelvic Cellulitis and Abscess—Osseous or other Solid Tumours growing from the Pelvic Walls.

On introducing the finger into the vagina, it may be discovered that there is a tumour projecting into the canal from above or at either side, or that the wall of the vagina is pressed inwards by a tumour situated external to it; or it may be discovered that there is a tumour in the pelvis, near the vaginal canal, the shape, dimensions, &c., of which can be determined by a digital examination. It is here intended to consider the diagnosis of tumours situated in the pelvis around the vaginal canal, and whose presence is there perceivable by the finger.

The points to which it is necessary to direct attention in forming a diagnosis as to the nature of a pelvic tumour are, the degree of resistance imparted to the touch, the presence of fluctuation, the mobility or fixed character of the tumour, its size, its shape, and its relations to the uterus, the presence of inflammatory signs, tenderness, puffiness, or swollen condition of the parts with which the finger is brought into contact. All of these points are important; and when by careful observation we have obtained a good idea of the physical conditions of the tumour, the diagnosis is not a matter of much difficulty, unless in very exceptional cases. In

many cases it is necessary, in order to complete the diagnosis, to conjoin with the vaginal examination, an examination of the abdomen.

A tumour felt through the walls of the vagina on digital examination may be caused by—

Distension of the bladder.

Calculus in the bladder.

Distension of the rectum by fæces.

Cancer of the rectum.

Retroversion and retroflexion of the unimpregnated uterus.

Retroversion and retroflexion of the gravid uterus.

Anteversion and anteflexion of the uterus.

Fibroid tumours growing from, and in, the posterior part of the cervix uteri, or from the uterus itself.

General enlargement of the uterus, from whatever cause.

Enlargement of Fallopian tube, due to distension by serous or purulent fluid; or by blood, and Fallopian pregnancy.

Abdominal pregnancy.

Blood tumours of the pelvis (peri-uterine hæmatocele).

Ovarian tumours, also enlargement or congestion of the ovary.

Cysts of the broad ligament (Wolffian cysts).

Hydatid cysts.

Pelvic cellulitis and abscess.

Osseous or other solid tumours growing from pelvic walls.

Taking the os uteri as a centre, we may group the different kinds of tumours felt through the vaginal walls, accordingly as they are found, behind, in front, or at the sides of this central point.

The tumours which may be *felt equally on all sides*—that is to say, which are not felt exclusively in one or other position—are the following:—Enlargement of the uterus; peri-uterine hæmatocele; pelvic cellulitis; ovarian tumours; extra-uterine pregnancy; fibroid tumours. Ascitic distension of the peritoneum should perhaps be added to this list, although there is no tumour in the strict sense of the word in such cases.

The tumours which are felt exclusively *behind* the os uteri are:—distension of the rectum by fæcal matters; cancer of the rectum; retroversion or retroflexion of the uterus.

The tumours which are felt usually, but not exclusively, *behind* the os uteri are:—ovarian tumours in their early stage of growth; distension of the Fallopian tube by fluid of any kind; Fallopian pregnancy; Wolffian and hydatid cysts.

The tumours felt exclusively *in front* of the os uteri are:—cal-

culus in the bladder, distension of the bladder with urine, anteversion and anteflexion of the uterus.

If for the word 'behind' the word 'laterally' be substituted, in the foregoing summary, the account given will still be true, for those pelvic tumours which are lateral are generally also posterior to the uteri, and *vice versâ*.

This short statement may serve to indicate the more prominent characteristics of the tumours included in the foregoing list. The several conditions in question will now be considered in detail, and their diagnostic peculiarities pointed out.

Distension of the bladder sometimes gives rise to a tumour projecting downwards and backwards into the vagina; it is more particularly observed when there is prolapsus of the uterus. In such cases the bladder may be partially protruded as far as, or beyond, the vaginal outlet. In labour, the distended bladder is occasionally protruded downwards in the same direction, and is at such a time liable to be mistaken for the bladder of membranes appertaining to the ovum. A very little attention would enable us to decide as to the nature of such a tumour. Its softness, the presence of fluctuation, its position, and the fact of its disappearance on using the catheter, are characteristic enough.

A stone in the bladder is readily felt through the lower wall of the bladder, by the finger introduced into the vagina; and the size and shape of the calculus or calculi can also be made out by this method of examination. A tumour of this kind could hardly be mistaken for anything else; its position, its mobility, &c., would at once suggest to the observer its nature, and an examination of the interior of the bladder, by means of the catheter or sound, would substantiate the diagnosis.

Distension of the rectum by fæces.—In this case a tumour is felt behind and through the vagina, in the position which the rectum is known to occupy. The distension is sometimes so considerable, that the tumour whose presence is known to us by this method of examination is very large. It is hard and irregular, and its shape is identical with that of the rectum. Such a tumour it is hardly possible to confound with anything else.

Cancer of the rectum.—There may be felt behind the vagina, in such cases, a hard, irregular, nodulated tumour, evidently belonging to the rectum, and which is the seat of pain and tenderness on pressure. The cancerous mass may, and usually does, produce stricture, and accumulation of fæces in the tube above. It is generally necessary to unload the rectum by means of enemata,

in order to ascertain the exact position and relations of the cancerous tumour. The pain in defæcation, the discharges of blood from the rectum, and the cachexia generally present, are the chief of the rational signs of the presence of this disease. This malignant disease may be found to have extended to the vagina itself, at its upper part. The thickening of the vaginal walls, its adhesion to the parts beneath, and its continuity with the morbid and painful enlargements around the rectum, indicate its nature. Cancer of the encephaloid variety has in some rare cases been known to grow from the recto-vaginal septum, project into the vagina, and appear as a tumour between the nymphæ. Examination of the attachments of the tumour would clearly indicate its origin, as distinguished from tumours growing from, or connected with, the cervix uteri.

Retroflexion or retroversion of the unimpregnated uterus is readily distinguished by the tumour forming part of the uterus, and by the use of the sound. It is most likely to be confounded with fibroid tumour growing from the back of the uterus.

Retroflexion of the gravid uterus.—Here the tumour may be of considerable size, the os is high up and difficult to reach, the patient is generally known to be pregnant, and the tumour has a softer feel than is communicated by a fibroid tumour in the same position.

When the gravid uterus constitutes the tumour, the symptoms usually show themselves with great intensity and quickly. The use of the sound would of course clear up all doubts, but unless the case be clearly not one of pregnancy, this instrument must not be had recourse to. An ovarian tumour does not effect such an amount of dislocation upwards of the os uteri as is witnessed in the other case. From extra-uterine pregnancy, in which also a tumour may be present behind the upper part of the vagina, it is to be distinguished by the continuity of the tumour with the uterus, also by the non-symmetrical shape of the tumour in extra-uterine pregnancy. From fluid or bloody distension of the Fallopian tube, and from Fallopian pregnancy, the tumour due to retroflexion of the gravid uterus is also to be distinguished by its central position, its greater firmness, the continuity of the tumour with the cervix, &c.

Another condition with which retroflexion of the gravid uterus may be confounded, is retroflexion of the unimpregnated uterus, accompanied with hypertrophy of the fundus and of the uterus, generally, and with or without development of fibrous growths in

the posterior uterine wall. Retroversion of the uterus with a fibrous tumour or tumours growing in its posterior wall, suddenly occurred to a patient who came under my notice with enormous distension of the urinary bladder. Here the effect was pretty much the same as if the uterus had been enlarged from pregnancy and had become suddenly retroverted. The greater elasticity, smoothness, and regularity of a tumour constituted by the impregnated uterus would, however, be the distinguishing character of the one, as the hardness, firmness, and resistance would be the distinguishing characters of the other condition.

When retroflexion of the gravid uterus persists, abortion usually occurs about the fourth month, or earlier; but a case is related by Dr. Oldham* in which the displacement persisted during the whole term of pregnancy. In endeavouring to make out the diagnosis of a case of retroflexion, the examination by the rectum is of great value.

Anteversion and anteflexion of the uterus.—If a tumour be felt through the vaginal walls in front of the cervix uteri, hard, smooth, and rounded in shape, while the os uteri itself is thrown somewhat backwards, the case may prove to be one of anteversion or anteflexion. The use of the sound, with the precautions to be mentioned more particularly by-and-by, would give us correct information as to this point, and prevent our falling into the error of Levret, who mistook an anteverted fundus for a calculus in the bladder.

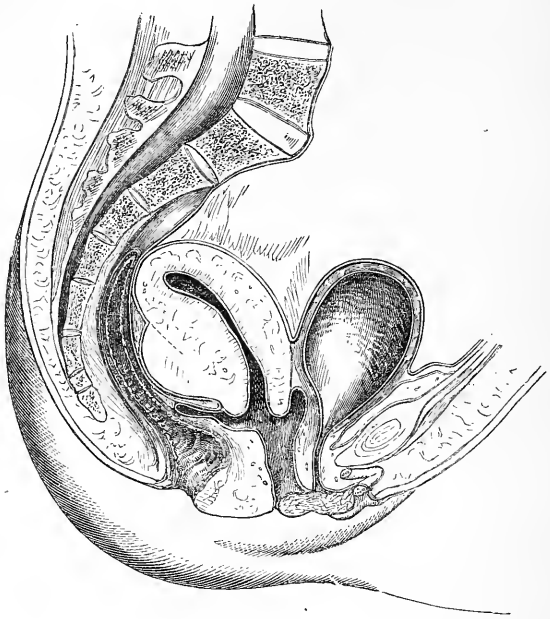
Anteflexion of the gravid uterus is a condition which is, according to my experience, rather common. It frequently occasions miscarriage. The tumour is felt in front of the os uteri, which latter is situated further back than usual. The functions of the bladder are generally interfered with very much in such cases. During the fourth month the dislocation becomes—if at all—reduced, and the patient is relieved.

Fibroid tumours growing from and in the posterior part of the cervix uteri, or from the uterus itself. (See fig. 21.)—It is sometimes a matter of difficulty to distinguish between this condition and retroflexion of the unimpregnated uterus. In both there is a tumour, hard, smooth, and resistant, felt behind the upper part of the vagina and moving with the uterus. If a fissure be felt between the tumour and the cervix, the case is probably one of flexion of the uterus. It is not a common circumstance for

* *Obstetrical Transactions*, vol. i.

tumours to grow in this position, the more usual seat of fibroid tumours being higher up than the cervix. Fibroid tumours growing from the uterus higher up and hanging down into

Fig. 21.



the utero-rectal pouch might be mistaken for retroflexion of the uterus, provided that the shape of the tumour resembled that of the fundus of the uterus. The mobility of the tumour, and its want of connection with the lower part of the uterus, would distinguish it from that due to fibroid tumour growing lower down. There is generally, in such cases, a want of symmetry in the tumour which is sufficient of itself to distinguish it from retroflexion of the uterus.

General enlargement of the uterus, from whatever cause.—When the cavity of the uterus is considerably distended by the presence of a fœtus, by a large polypus, or from whatever cause, a tumour may be felt behind or in front of the upper part of the vagina. In cases of pregnancy, the recognition of the presence of this tumour is of the greatest possible assistance in establishing the diagnosis.

We have now to consider the diagnosis between enlargements

of the uterus from whatever cause and other conditions. The determination of the *nature* of such enlargement will form a question for subsequent consideration.

When the tumour felt behind the upper part of the vagina is caused by an enlarged uterus, as in the case of pregnancy at the third or fourth month, it is rounded, smooth, and central, there is an evident continuity between the tumour and the cervix, and, moreover, the tumour spreads out behind, to the sides and to the front of the cervix equally. It is not possible to detect any line of division, or any depression between the two parts; the cervix constitutes, in fact, the centre of a rounded symmetrical body, the shape of which, together with the absence of irregularities on the surface, show that it can be nothing but the uterus. If a rounded smooth tumour were felt behind the cervix, and no corresponding enlargement in front of the cervix, the only possible conclusion would be, either that the tumour felt posteriorly was not the uterus at all, or that it was the uterus bent backwards, as described above (p. 92).

The question—What is the nature of the enlargement of the uterus? supposing such to be present—is usually to be resolved by a combined vaginal and abdominal examination. In some few cases the vaginal examination alone is sufficient. The vaginal examination of the 'enlarged uterus' will be considered presently.

Enlargement of the Fallopian Tube gives rise to a rounded, somewhat pyriform elastic tumour, which may be felt through the upper vaginal wall. The Fallopian tube occasionally becomes distended, in rare instances very greatly so, by a collection within it of *serous*, *purulent*, or *bloody fluid:* the distension may be due to development of the ovum within the canal—*Fallopian, or tubal pregnancy.* The tumour constituted by a distended Fallopian tube is usually of a somewhat lengthened form, resembling in shape a portion of distended intestine. If the whole Fallopian tube be equally affected a tumour of a semicircular, sausage-like form results. The distension may be limited to one or other end of the tube; one or both tubes may be affected.

The enlargement of the Fallopian tubes constituted by any of the conditions mentioned, is distinguished from other tumours in the neighbourhood by the following characters:—

The tumour, when of Fallopian nature, is rounded, movable, well-defined, separable (usually) from the uterus; situated in the retro-uterine pouch, a little to one side. Fluctuation may be evident in the tumour; it is elastic to the feel. There may or

there may not be tenderness on pressure. Difficulty and pain in defæcation, 'pressure pains' in various parts, pain in walking—these are the symptoms more often observed.

The tumours with which the distension of the Fallopian tube is most likely to be confounded are—ovarian cystic tumours in their early stage of growth, Wolffian cysts, hydatid cysts, and abdominal pregnancy. There are no means of absolutely distinguishing between a chronic serous, or hæmorrhagic distension of the Fallopian tube and the affections in question: in all, the course of the affection may be slow; in all, there may be trifling inconveniences experienced by the patient; and on the mere shape and size of the tumour no absolutely reliable conclusion can be formed. When Fallopian pregnancy is present, the course of the affection is different; in almost all cases the affection ends fatally, by rupture of the tubes, and hæmorrhage into the abdominal cavity, at the second or third month of gestation, rarely later: accordingly when we have to do with a chronic enlargement of the tubes, this latter condition may be dismissed from the consideration. The diagnosis of tumours produced by distension of the Fallopian tube by fluid, from other tumours, will be again considered under 'Examination of the Abdomen.'

In *Fallopian pregnancy*, the patient is usually known or suspects herself to be pregnant; the tumour grows continuously and pretty quickly, the uterus simultaneously enlarges, almost to the same degree as if the ovum were within it. Menstruation is not so constantly absent as in ordinary pregnancy. The os uteri presents the conditions met with in pregnancy. Rupture of the Fallopian tube, escape of the fœtus into the abdomen, and death, are the ordinary issue of these cases, the accident generally occurring before the middle period of gestation has arrived: cases of Fallopian pregnancy are for this reason rarely diagnosticated during life. The fœtus may, however, die, and undergo mummification within the tube.

As stated further on in many of the cases reported as cases of tubal gestation, the condition actually present is defective development of the uterus, this organ being divided into two, and the ovum developed in one cornu of this double uterus. One cornu may be larger than the other; and when the ovum is developed in the imperfectly formed or lesser cornu, rupture almost invariably takes place; but when the ovum is developed in the more perfect cornu, pregnancy may proceed normally. Hence we may meet with cases in which the cavity of the uterus

does not appear to contain an ovum, but in which a tumour containing an ovum is detected close to it, and yet the case may not be one of Fallopian pregnancy in the true sense of the word, but of pregnancy in one cornu of a bilocular uterus.

Abdominal pregnancy.—In cases of abdominal pregnancy, the ovum may become fixed and encysted at the lower part of the pelvis behind the uterus, and between it and the rectum, and may in this position give rise to a tumour of a rounded elastic character. Symptoms, such as bearing down behind, pain and discomfort in the pelvis, show themselves earlier than in the case of Fallopian pregnancy.

The signs of extra-uterine pregnancy, particularly of abdominal pregnancy, are peculiar. There is suppression of the menses, but there are often (and this is a circumstance very likely to mislead) irregularly recurring hæmorrhages, which may be considered to be menstrual. The woman, from her sensations and condition, generally thinks herself pregnant. The patient may suffer greatly from pain during the whole course of the pregnancy: this pain was very severe in a case which fell under my own observation.

The diagnosis of abdominal pregnancy, the tumour being in the pelvis, from Fallopian pregnancy, would be difficult at an early period; but if the pregnancy have advanced beyond the middle period, the presumption is, that the fœtus, if not in the uterus, is not in the Fallopian tube. The possible case of double uterus before mentioned, should be borne in mind. In a very extraordinary case recorded by Mr. L. R. Cooke, there was simultaneous intra-uterine and abdominal pregnancy, the pregnancy going on to full term.*

Occasionally we have to do with a tumour behind the uterus, which is constituted by the *remains* of the fœtus after abdominal pregnancy. These remains, enclosed in a sac which becomes adherent by inflammation to the adjacent peritoneal surface, and which may be recognised by the exploring finger as bones, may continue undischarged for months, or even for years. In a case related by Dr. Brandt,† a bony tumour, containing the remains of a fœtus, remained in the abdomen for fifty-four years; the patient had borne two children naturally since she became pregnant with the fœtus which was afterwards retained. Several other cases of a like character but of less duration have been reported.

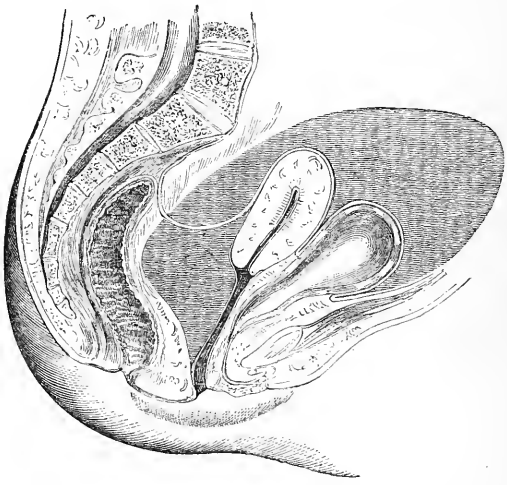
* *Obstetrical Transactions*, vol. v. † *Ed. Med. Journ.*, Sept. 1862.

Blood tumours of the pelvis; peri-uterine hæmatocele.—Those tumours felt through the vaginal walls, on digital examination, and constituted by the presence of blood, or masses of blood-coagulum in various stages of transformation, and of very various size, are included under the above head.

The tumour so constituted has, as a rule, the following general characteristics:—its form is rounded, it is often tolerably well defined, it may be hard or soft, according to circumstances presently to be pointed out; usually limited to one side of the pelvis—the posterior and lateral aspects more particularly—it may be less circumscribed, and in some cases the tumour is felt to surround the uterus on all sides. The vaginal wall is pressed downwards, and its canal thus encroached upon, according to the size and relations of the tumour.

The physical examination of the tumour, as effected by a vaginal digital examination, may, or may not, enable us to arrive at a diagnosis of its nature, but the physical examination, the

Fig. 22.*



symptoms presented by the patient, and the history of the case, all taken together, usually render the formation of a diagnosis comparatively easy.

The history is of the most assistance in a doubtful case. The

* Fig. 22 shows the position of the tumour, as felt from the vagina, in a case at University College Hospital. Further illustrations will be found in the chapter on Hæmatocele.

tumour most resembles that produced by pelvic cellulitis; from it it is distinguished by the suddenness of its occurrence, by the absence of that hot, puffy condition of the vagina, characteristic of the induration stage of pelvic cellulitis, by the absence of constitutional fever, and by the absence of the thickened brawn-like condition of the vaginal wall. The tenderness may be pretty nearly equal in both. In some cases, the hæmorrhagic effusion undergoes after a time suppuration, and the physical characters may then be identical with those of pelvic abscess. It will thus be seen that the diagnosis of hæmatocele from abscess is at first easy, but that it may be more difficult, later. From fibroid tumour, peri-uterine hæmatocele is distinguished by its want of uniformity and comparative want of solidity. The diagnosis of (unruptured) extra-uterine pregnancy, from peri-uterine hæmatocele, may be difficult in some cases, especially when a hæmorrhagic discharge is present. In extra-uterine pregnancy the uterus is enlarged, but enlargement, or at all events elongation, of the uterus, may be also observed in hæmatocele (Duncan). If the case were one of suspected extra-uterine pregnancy, at about four months, the absence of the general symptoms of hæmatocele would be confirmatory of the suspicion. Retroversion of the gravid uterus has been confounded with peri-uterine hæmatocele; but a careful consideration of the case should prevent a repetition of such an error.

Ovarian tumours in ordinary cases could not be mistaken for hæmatocele. Dr. M'Clintock believes that such a mistake might be made if the ovarian cyst were in a state of inflammation, and the previous existence of the ovarian tumour were unknown.

In the majority of cases, the occurrence of the symptoms at a catamenial period, their instantaneousness, and the simultaneous appearance of a tumour rather soft or fluctuating, and of tolerably defined character, pressing on the vaginal walls—these, taken together, indicate a hæmorrhage in the neighbourhood of the uterus. In those cases of peri-uterine hæmatocele, however, where the development of the tumour is more insidious, there being an absence of marked symptoms at time of the occurrence of the effusion, the diagnosis is more difficult. In these latent cases the effusion is at first slight, and the tumour slowly increases in size.

In doubtful cases, the use of the grooved needle or a fine trochar and canula has been suggested by Professor Simpson to determine the nature of the tumour. The exhausting syringe and

fine tube recently introduced by Dr. Prothero Smith is an instrument of great service in aiding the diagnosis under such circumstances. When the tumour is posterior, and we wish to ascertain the presence of fluctuation, we may with advantage make a double simultaneous examination from the rectum and the vagina. The diagnosis of cases of rupture of the fœtus containing cyst in extra-uterine pregnancy from cases of peri-uterine hæmatocele produced by irregular menstruation, is by no means easy. In cases of rupture of the tube in Fallopian pregnancy, the diagnosis frequently rests chiefly on this, that the woman is known to be, or suspects herself to have been, pregnant. The attention of the attendant is likely to be diverted from the idea of pregnancy by the losses of blood which appear to be very frequently present in extra-uterine pregnancy, and which are erroneously looked on as evidence of menstruation.

Lastly, it must be recollected that an hæmatocele becomes sometimes converted into an abscess: when this is the case a careful investigation of the history and physical signs alone will indicate the actual state of things present.

Ovarian tumours.—Ovarian tumours are met with in the pelvis of all sizes, behind, in front of, or at the sides of the uterus. The position is for the most part determined by the size. A description of the physical character of ovarian tumours generally, their size, mode of growth, &c., will be found in the chapter on Diseases of the Ovaries; and the observer should be acquainted with the particulars in question, in order advantageously to consider the diagnosis of pelvic tumours from the vagina.

The larger number of cases which come before us, and in which there is a question as to the presence of ovarian disease, are cases in which the tumour has become so large as to invade the abdomen: there is an abdominal enlargement. It thus generally happens that the tumour, when it comes under our notice, is capable of being examined both from the vagina and through the walls of the abdomen.

When the ovary is enlarged, in consequence of the presence of inflammation, pain is always present, and on examination there is detected tenderness at the part of the vaginal wall corresponding to it. We are now and then able, in cases of ovaritis or neuralgia of the ovary, to detect the slightly enlarged ovary by digital examination; the ovary being sensitive to the touch, its position is then more easily ascertained. In the first stage of

cystic tumour of the ovary, however, pain is usually absent, and there is generally nothing to suggest the necessity for a digital examination.

When the tumour attains to the size of a large orange, symptoms more or less troublesome may begin, however, to show themselves. If the tumour, together with the ovary, be firmly attached within the pelvis, the symptoms will become developed at an earlier period than when the tumour is pedunculated, and when the freedom of motion it possesses is consequently greater.

When an ovarian tumour is small, it usually occupies the utero-rectal fossa, and is not quite in the middle line; growing backwards from the ovary, this is its natural position, and, when examined early enough, here the tumour is found to be situated.

In endeavouring to form a diagnosis as to the nature of a tumour we suspect to be ovarian, our first object should be to exclude the uterus from the consideration. We endeavour to move the tumour away from the uterus, and if a line of separation can be distinctly made out, we have advanced a step in the diagnosis. The sound is sometimes of great service in enabling us to ascertain the existence of this line of division when not otherwise appreciable. (See 'Examination of Uterus by Sound.') The tumour may, however, be adherent to the uterus; in this case the sound is also of service, by informing us of the direction of the uterine canal, and further, as to the shape, size, and mobility of the tumour. In the early stage of an ovarian tumour it lies behind the uterus, or at the side, owing to the anatomical relations of the ovary; and hence it could in this stage hardly happen that it should be felt in front of the uterus. If, therefore, the uterine sound were found to pass backwards, thus showing the tumour to be in *front* of the uterine cavity, it might be safely concluded that the tumour was probably not an ovarian tumour; but this observation by no means holds good in the diagnosis of cases of large tumour.

In a few cases where the development of the ovarian tumour proceeds rapidly, and the tumour remains in the pelvis behind the uterus, the inconvenience and distress which are produced are so considerable as to create greater difficulty as regards the diagnosis; micturition and defæcation are seriously interfered with, and severe pains in the pelvis or in the lower extremities are experienced.

From the tumour produced by presence of Fallopian dropsy, Fallopian pregnancy, or Wolffian cysts, small ovarian tumours might with difficulty be distinguished, the tumour being in all these cases chronic, and not giving rise, necessarily at least, to inconvenience. In cases of Fallopian pregnancy, the increased size of the uterus and its softness assists in the diagnosis.

In cases of abdominal pregnancy, when the cyst is situated low down in the pelvis, the tumour, in its roundness, elasticity, and other physical characters, somewhat resembles that produced by an ovarian tumour. The rarity of the affection, the presence of signs of pregnancy already alluded to, are the chief points to which attention is necessarily directed in forming a diagnosis. From hydatid cysts growing in the peritoneal cavity low down, small ovarian tumours would be probably distinguished with difficulty. The hydatid cysts are usually more firmly fixed, and move with the vaginal wall; small ovarian tumours are usually movable, and single, unless indeed in cases of double ovarian disease; whereas hydatid cysts attached to the pelvis in the neighbourhood of the vaginal canal are usually two or three in number.

The tumour produced by the peri-uterine hæmatocele differs from ovarian tumour—first, in its shape, which is usually not globular, as is the case in ovarian tumour; secondly, in its relations, it being less easily definable and separable from the adjacent parts than ovarian tumours; thirdly, in regard to the accompanying or preceding symptoms (see p. 98); fourthly, in respect to its want of mobility as compared with ovarian tumour.

Abscesses, or plastic effusion, the result of inflammation of various kinds, might, under certain circumstances, be confounded with ovarian tumour. The history of the case should, under these circumstances, be carefully looked into, when its real nature will become at once apparent. Lastly must be mentioned the possible case of two tumours being found in the pelvis. It occasionally happens that pregnancy and ovarian disease are observed simultaneously.

What has been said hitherto applies only to the diagnosis of tumours suspected to be of ovarian origin, felt through the vaginal walls, which are of inconsiderable size, from that of a walnut to that of an orange, for instance. We have now to consider those cases which are, clinically speaking, more common, and in which the tumour felt by digital examination from the vagina is *much larger* than this—in which, indeed, it is found so large as to more or less completely fill the pelvis. There may be present a very

large ovarian tumour, and yet comparatively little direct evidence of its presence may be obtained by digital vaginal examination alone; and for this reason, that the tumour may have escaped altogether from the pelvis, dragging up with it the ovary, and part of the broad ligament, to become a tumour nearly completely abdominal. We have now, however, to deal with those cases in which the ovarian tumour is still wholly or in part in the cavity of the pelvis, and to point out the diagnosis of the tumour from others with which it may be confounded.

When the tumour is small, it may be impossible to obtain much information from an abdominal examination; but in the cases we are now about to consider, the tumour is so large that information is always to be derived from abdominal examination, and the diagnosis is arrived at by comparing the results obtained by each method. A large tumour of ovarian nature occupying the pelvis necessarily exercises an influence on the surrounding organs. Thus the uterus is pushed to one side, or dislocated in various directions; it may be pushed downwards or forwards by the tumour, or it may be stretched and extended, so that the cavity is materially lengthened.

The most important condition from which ovarian tumour is to be separated, is enlargement or tumour of the uterus; this distinction is not unfrequently attended with some degree of difficulty. The first point to be made out is the position of the cervix uteri, and this being ascertained, it is in most cases easy to decide whether the tumour present be constituted by the enlarged uterus or by a tumour separate and distinct from this organ. The most reliable distinction between an enlarged uterus and an ovarian tumour is the fact that in the former case the cervix uteri is in the median line, and an equal portion of the tumour is on each side of it, whereas in the other case the cervix uteri is on one side, out of the middle line, and the mass of the tumour lies to one or other side of this part of the uterus. Even this is likely, however, to mislead. When the uterus is considerably enlarged (by pregnancy, e.g.), the cervix may be high up, and difficult to reach in either case; but when a large ovarian tumour is present, it is usually thrust out of the middle line of the body. In the case of pregnancy far advanced, the vaginal portion of the cervix would be altered also in other ways still more characteristic, as will be described in the proper place. It may happen, however, that enlargement of the uterus from pregnancy and ovarian tumour

coexist in the same patient; in such a case the diagnosis would be cleared up by circumstances subsequently observed.

A good deal of variation in the relations of the tumour in the case of ovarian disease is connected with the structure of the tumour itself. If the tumour become pedunculated at an early period, it soon becomes abdominal, and there is less evidence of its presence afforded by a vaginal examination; but if it be sessile, this change does not so readily take place, and the tumour may be moulded, so to speak, below to the cavity of the pelvis, while it may at the same time spread upwards above into the abdomen.

When the ovarian tumour is large, or, at all events, when a considerable portion of such tumour occupies the pelvis, it may be confounded with retroversion of the gravid uterus, as well as with enlargement of the uterus of other kinds. In retroversion of the gravid uterus, the position of the cervix uteri is most peculiar: it is thrust upwards and forwards, and the fundus uteri forms the tumour which presses downwards in the vagina. Such a position of the cervix uteri is rare when ovarian tumour is present. Cases in which pregnancy persists as far as six months with the uterus in this unusual position are very rare, but they are cases in which such a mistake is most likely to occur.

Large ovarian tumours occupying the pelvis may be confounded also with large fibrous tumour of the uterus. In hardness and resistance they may resemble each other; but, as a rule, the ovarian tumours have greater elasticity than is the case if fibrous tumours be present.

In ascites, with great distension of the peritoneal cavity, there may be felt a tense resistant tumour at the roof of the vagina. Such a tumour, however, could hardly be mistaken for one of ovarian origin. Its greater softness and want of definition are characteristic, and the results of an abdominal examination would soon set the question at rest. The distended bladder has, in some rare cases, been mistaken for an ovarian tumour. The previous history, the results of abdominal examination, and the use of the catheter, would decide this question, should it by any possibility arise.

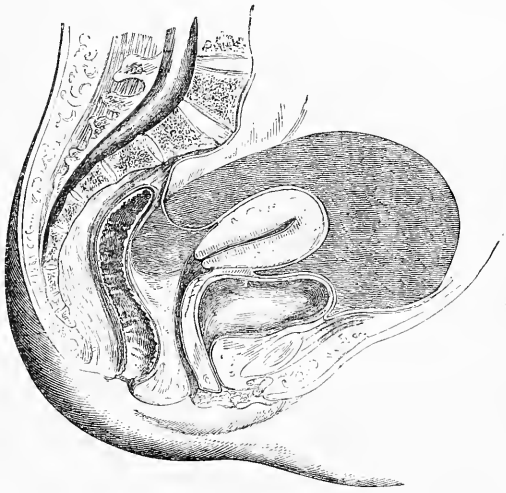
The diagnosis of the *nature* of large ovarian tumours will be considered in the chapter on Diseases of the Ovaries.

Other cystic growths in the pelvis.—The cysts of the broad ligament (Wolffian cysts) which generally do not attain a size greater than those of an orange, may greatly exceed this in size. Their diagnosis is obscure and chiefly rests on the chronic course

of the tumour. Presence of hydatid cysts would be expected to be observed in association with similar disease of the liver.

Pelvic cellulitis and abscess.—The chief diagnostic points may be here enumerated. The fixed pain in the region of the broad ligament of one side; the tenderness on pressure above Poupart's ligament over the brim of the pelvis—a sign rarely absent; the tenderness on vaginal examination; the flexion of the thigh on the trunk on the affected side; the general disturbance, mani-

Fig. 23.*



fested in feverishness, inappetency, hectic, frequent pulse, prostration, gastric disturbance, &c., the occurrence of rigors, or a feeling of coldness at the onset of the affection; the pressure signs;—these are the most characteristic indications.

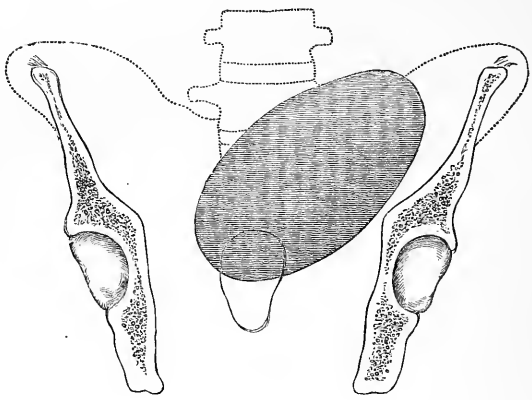
The vaginal examination is of great importance. The tumour perceived by the finger is generally hard, identified as it were with the pelvic wall, often inseparable from the uterus, situated to one side or in front of the uterus, or partly behind it. It is reached with some little difficulty when the effusion occupies the brim of the pelvis, but even then a careful examination will enable the observer to define its lower border. An abdominal examination will render evident its outline superiorly.

* Fig. 23 represents the contour of the hard rounded tumour as felt from the vagina. Fig. 24 (on p. 106), represents the contour as supposed to be viewed from the front. These outlines illustrate a case in University College Hospital.

In the first stage the tumour is hard—when liquefaction has occurred fluctuation may be evident.

There are some affections with which pelvic abscess may be confounded—peri-uterine hæmatocele, extra-uterine pregnancy, ovarian tumours of rapid growth (as in a case referred to by König), or which have become the seat of inflammation (M'Clintock).

Fig. 24.



The history of the case is exceedingly important in reference to the diagnosis. Chronic cases of peri-uterine hæmatocele, where the tumour undergoes a process of liquefaction, offer, so far as the physical characters are concerned, most resemblance to cases of pelvic abscess. Careful scrutiny of the facts relating to the development of the tumour, of the attendant symptoms, and the result of abdominal examination will afford means for deciding the question.

Osseous or other solid tumours growing from the pelvic walls.—There are a few cases on record, in which osseous tumours—exostoses—have been found growing from the walls of the pelvis, and forming masses of various sizes and shapes. The diagnosis of the nature of such a tumour would not probably be attended with great difficulty. Its growth is slow, it is necessarily hard and firm, and it is immovable. There is a condition, also rare, which might be mistaken for it, viz. projection of the body of the lowest lumbar vertebra forwards into the cavity of the pelvis, due to disease of the lumbo-sacral articulation; this disease being the result of injury, or simply constitutional.*

* See Dr. Barnes's exhaustive essay on Spondylolisthesis in *Obstet. Trans.*, vol. vi.

Cancerous growths from the inner surface of the ilium have been noticed. Kiwisch states that he saw a patient in whom a mass of this kind, of the size of a bead, in its shape and position resembled an ovarian tumour. Hard fibrous tumours are now and then witnessed growing from the sacro-iliac symphysis into the pelvic cavity.* Denman relates a case in which an excrescence of a firm fatty substance projected from one side of the upper part of the sacrum, and was so large as nearly to fill the pelvic brim. In Dr. D. D. Davis's work † are related two very remarkable cases, in which large fibrous tumours were found growing from the floor of the pelvis, and occupying this part of the pelvis so completely as to interfere with delivery.

The diagnosis of these tumours growing from the pelvic walls from tumours of the viscera might present some difficulty. The object would be to determine the point at which the tumour grew, and, unless the tumour were of considerable size, this would be comparatively easy. Cases of the kind above alluded to are extremely rare.

* Kiwisch. *Klin Vortr.* Bd. II., edited by Scanzoni, p. 326.

† *Principles and Practice of Obstetric Medicine*, vol. i. p. 142.

CHAPTER VI.

EXAMINATION OF THE ABDOMEN, AND DIAGNOSIS OF ABDOMINAL TUMOURS.

Methods of Examination.—Position of the Patient during Examination.

Enlargement of the Abdomen.—Results of Inspection as to Diagnosis of Nature of Enlargement—Palpation; Discovery of a Tumour; Percussion; Obscurity produced by Fatty Distension.

Presence of Fluid.—Various Causes; Ascites, Ovarian Dropsy, Ascites with Tumour—Diagnosis of these—Extreme Distension of Bladder.

Gaseous Distension.

Cases simulating Presence of a Tumour.

Tumours traceable into the Pelvis; Enumeration of these.

Tumours traceable into Pelvis more rarely met with; Brief Description of these.

Tumours not traceable into the Pelvis; Enumeration.

In the diagnosis and treatment of the diseases peculiar to women it is frequently necessary to make a very careful examination of the abdomen. How this examination can be best made it is our object now to point out.

For clinical purposes, it is usual to divide the abdominal surface as follows: The portion of the abdomen above a horizontal plane passing through the anterior extremities of the tenth rib on either side, is the *epigastric region*, the lateral portions of which are the *right and left hypochondria*. The *umbilical region* is bounded above by the lower limit of the epigastric region, and below by a line passing between the anterior superior spinous processes of the iliac bones on either side. The *hypogastric region* comprises that portion of the abdomen situated below the line last mentioned. The inferior boundaries of this region are the ossa pubis, and Poupart's ligament on each side.

The *methods* of examination which we employ in investigating the condition of the abdomen are: 1. *Inspection*, by which we are made cognisant of the size and shape of the abdomen, the condition of the integuments covering it, &c. Measurement of the abdomen belongs to this division of the subject. 2. *Palpation*, by means of which we ascertain the presence of varying degrees of resistance, hardness, softness, and the like, of the abdomen generally, or

of different parts of the same, and are thus enabled to correct erroneous impressions conveyed by inspection alone. Under this head is included *fluctuation*, a physical sign of the presence of fluid. 3. *Percussion*, by the assistance of which we are able to distinguish between tumours or enlargements depending on the presence of solid bodies, and distension by air or fluid. 4. *Auscultation*, in which the sense of hearing is employed for the detection of certain sounds. 5. A combined vaginal and abdominal examination by means of palpation over the hypogastric region, while the finger of the other hand is within the vagina, or with the uterine sound within the uterus. In the diagnosis of pelvic tumours of doubtful nature, this combined examination is often of the greatest possible service.

It is hardly necessary to state that all these methods of examination are not employed in all cases. Inspection, palpation, and percussion, combined, are the methods of examination most commonly employed, and in a few cases we find in the employment of auscultation a means of arriving at a conclusion which other methods do not afford.

ENLARGEMENT OF THE ABDOMEN.

The most common case in which a diagnosis is required is that in which the abdomen is enlarged, and it is required to determine the nature and cause of the enlargement. The causes of abdominal enlargement are very numerous, and the possession of readiness in their diagnosis and discrimination implies the possession of no small amount of knowledge of the pathology and history of abdominal diseases. In endeavouring to ascertain the cause of the enlargement of the abdomen presented by the patient before us, our enquiry must be of a somewhat extensive character. That enlargement may depend on a morbid or altered condition of some one of the generative organs, or it may not; and in order that we may not fall into error, it is necessary to start with no preconceived view of the case. Where this preconceived view is thrust upon us, by the expressed convictions of the patient or other circumstances, it is important that our mental training be such as to allow of its being kept in the background as much as possible until reliable data for diagnosis have been obtained, and our enquiries have been made to cover possible sources of fallacy. The principle is to take nothing for granted,

to know for ourselves, and not to accept anything as reliable which only comes to us second-hand.

Position of the Patient during the Examination of the Abdomen.—The patient should be placed, lying on the back, on a firm unyielding couch or bed, the shoulders somewhat elevated, the knees a little drawn up so as to relax the abdominal parietes; the whole body should be in a state of absolute repose. It is sometimes desirable to engage the patient in conversation, in order to prevent a kind of involuntary contraction of the recti muscles, which is often present, and which interferes materially with the attainment of the object desired.

It is unnecessary to entirely uncover the skin of the abdomen in order to examine the abdomen by palpation. If, however, auscultation is to be practised, the stethoscope must be applied to the skin, or fallacies are likely to arise. In many cases, an inspection of the skin itself is desirable. It is best, however, to commence the examination without entirely uncovering the abdomen, and to obtain thus a general idea as to the shape and size of the same, the presence of tumour, and the like. Lastly, before undertaking a regular examination of the abdomen, the contents of the rectum and of the bladder should be evacuated.

The first question to be determined in a case of supposed abdominal enlargement should be—

Is the enlargement real, or only apparent, or assumed for purposes of deception?—It is a fact that some patients, desirous of being thought pregnant, or for other reasons wishing to impose upon us, can acquire the power of projecting the abdomen forwards, so as to simulate the enlargement due to pregnancy. This arching of the abdomen is effected by sharply bending the vertebral column in the lumbar region; and when patients presenting this factitious enlargement are made to lie down, on placing the hand over the centre of the loins a corresponding hollow is felt there. In a case which came under my own observation, the patient, a young woman about 25 years of age, had been supposed to have an abdominal tumour. On a casual examination, the appearance and general form of the abdomen were strongly corroborative of this supposition; but no tumour could be detected, no resistance was anywhere felt, and the tympanitic sound, on percussion, was decisive as to the correctness of this negative view of the case. The nurse in attendance directed my attention to the condition of the back, and it was then found that the patient was affected with angular, and also very slight lateral, curvature of the spine in the lumbar

region, the consequence of an injury received a few years before. Here the arching of the abdomen was real, but there was no enlargement of the abdomen in the true sense of the word. Then there is a remarkable class of cases in which the abdomen is enlarged, the patient believes she is pregnant, and endeavours to persuade others that this is the case. Chloroform is an essential aid to the diagnosis of these cases.

Having determined that the abdomen is actually enlarged, our next step is to endeavour to obtain some general idea as to its cause and nature.

Size of the Abdomen.—From the mere element of size alone there is nothing very positive to be deduced. It may, however, be stated that the most common causes of extreme persistent enlargement of the abdomen in women are ovarian dropsy and ascites.

As regards the *shape of the abdomen* in cases of abdominal enlargement, there is not very much of a conclusive character to be stated. If the enlargement be *symmetrical*, affecting the two sides of the abdomen equally, this is in favour of the presence of ascites or tympanitic distension of the intestines; but, on the other hand, a want of symmetry is usually observed when the enlargement is due to the presence of a tumour, as in cases of ovarian dropsy (generally), fibrous tumour or polypus of the uterus, enlargement and tumour of the liver or spleen, &c. To this general statement there are many exceptions. Thus, in large simple cyst of the ovary, the abdomen is often symmetrically enlarged at an advanced period of the disease. Similarly, ascites, when associated with tumours of the abdomen, often produces, superficially at least, a symmetry in the appearance of the abdomen on the two sides.

When we have to distinguish between ascites and ovarian dropsy, there is a point in reference to the shape of the abdomen which is of assistance, and it is this: that, whereas in cases of ovarian dropsy the enlargement is rounded anteriorly whatever be the position of the patient, in cases of ascites the anterior surface becomes flattened when the patient is laid on the back. This distinction, however, may fail us when, as is sometimes the case, the distension of the abdomen from ascites is considerable in degree.

Results obtained by Palpation.—These are most important. The position of the patient necessary for carrying out this mode of examination is that already described. The hand is to be

spread out flat, so as to bring as much of the palmar surface of the fingers into contact with the abdominal wall as possible. Pressure, slight at first and gradually increased in force, is to be then made over the whole of the abdominal surface, beginning with the hypogastric region, the general direction of the pressure being towards the vertebral column. One or both hands may be employed in this operation. It is important that the pressure made be at first slight in degree; otherwise contractions of the muscles are produced, and the attempt of the operator will be defeated. Normally, the abdomen offers no resistance to the pressure of the fingers (the patient being placed as above directed), save that produced by spasmodic and involuntary, or intentional contraction of the recti muscles; everywhere the fingers are allowed to sink inwards to a considerable depth, and it is usually possible to touch the vertebral column posteriorly.

Discovery of a Tumour.—Our first object in exercising palpation should be to ascertain whether the distension of the abdomen which is observed be due to a tumour within the abdomen of a solid nature. If the abdomen be only moderately distended, and the fingers can be made to sink inwards equally at all points, whether above or below, but especially below, without encountering a hard resistant body, we may pretty confidently predict that no solid tumour is present. When the abdomen is largely distended, however, the case is different; the fingers may in some such cases be made to sink inwards to a considerable depth without encountering a solid resisting body, while such a one is nevertheless present. This now and then happens when the abdomen contains a solid ovarian tumour together with a large amount of ascitic effusion.

The difficulty arising from rigidity of the recti muscles has next to be dealt with. Women desiring to frustrate the purpose of the examiner, and to disguise the presence of a uterine tumour, occasionally have recourse to the expedient of contracting these muscles. The practitioner will generally be able to procure the relaxation necessary, by engaging the patient in conversation—in extreme cases by giving chloroform, as mentioned above. The contraction is sometimes also purely involuntary. Such cases are extremely perplexing, as will be explained farther on; contraction of the recti muscles may actually simulate the presence of a tumour. In cases of suspected pregnancy, the recognition of the presence of a tumour is of extreme importance; for however positive the other signs of pregnancy may

be, they are worth nothing if it can be clearly made out that there is no tumour discoverable in the abdomen. Many circumstances, then, render it desirable that the practitioner should be an adept in the discovery of an abdominal tumour such as that caused by the gravid uterus. By palpation we are usually able to detect the presence of such a tumour at an early period of pregnancy, and the examination for the discovery of this, or, indeed, any abdominal tumour, should be conducted as follows: The patient should lie as above directed, the rectum and bladder having been previously emptied; the operator, having placed the hand flat on the abdomen close above the os pubis, is then to follow the admirable procedure recommended by Rœderer. This consists in directing the patient to set the abdominal muscles in action by breathing very deeply, the hand being made all the while to follow the movements of the abdominal wall very closely. At the moment when the expiration is completed, the hand comes in contact with the hard, round, ball-like uterine tumour. In the discovery of tumours in the abdomen, which are not otherwise easily detected, this method of examination is quite invaluable. If the tumour be so large as to fill the abdomen, the method in question is of course of no service.

The recognition of a tumour is frequently, especially in cases of pregnancy, made difficult by the presence of a *fatty condition of the abdomen*, which prevents us from ascertaining the presence of the tumour due to the enlarged uterus.

Supposing that by careful kneading of the abdomen at every point no hard tumour is discoverable, our conclusion must be shaped in this wise: If the abdomen be soft, and everywhere non-resistant, allowing the fingers to sink inwards equally at all points, the enlargement not being considerable, it will be evident that the enlargement is not constituted by a solid tumour of any kind. We may even go further than this, and state that neither can it be caused by a circumscribed fluid tumour (such as encysted dropsy of the ovary, for instance). If, however, the enlargement of the abdomen be *considerable*, the conclusion formed under the above circumstances cannot be so exact and definite. The fingers may be allowed to sink inwards some distance without encountering solid resistance, but there may nevertheless be a solid tumour. Such a condition is met with, as before remarked, when there is a solid or other tumour of the ovary, or a solid tumour of the uterus or of other organs *associated* with ascitic distension of the peritoneal cavity, or, again, when there is a very large unilo-

cular cyst of the ovary occupying the abdomen, and which is not very tense or resistant. If, on the other hand, the condition of the walls of the abdomen be such as to prevent the sinking inwards of the fingers, this does not necessarily imply that there is, or that there is not, a solid tumour present.

The result of examination by palpation being that no tumour is discoverable, we must have recourse to the other method of examination next to be described.

Results obtained by Percussion.—The middle finger of the left hand, being pressed closely against the abdominal wall, is to be struck by the tips of the fingers of the right hand, sharply but lightly. If a clear sound be elicited, it is evident that there is gaseous distension present; but if the sound be dull, the distension is due to fluid or solid matters. We have in this mode of examination a ready method of distinguishing *gaseous* from *fluid distension*: palpation would give but little assistance in deciding between these two. When the enlargement is due to the *presence of fat* in undue quantity, percussion affords no decisive results.

When it is a question between gaseous and fluid distension, valuable aid is afforded by the *fluctuation* test. The palmar surface of the fingers of the left hand is pressed closely over one side of the abdomen, and the abdomen is lightly tapped by the fingers of the other hand on the opposite side. When fluid is present between the two points in question, an impulse is communicated through the aqueous medium, and the fingers of the left hand experience a sudden impulse, varying in character with the nature of the fluid and with the degree of tightness of the distension. No impulse of the kind is communicated when there is gaseous distension alone; but when there is an accumulation of fat present, a sensation somewhat resembling fluctuation may be conveyed. This, however, could only deceive an inexperienced observer. The test of fluctuation is only of value when applied by an educated hand. A sensation closely resembling that of fluctuation is sometimes felt when the abdomen is largely covered with fat.

To apply these several methods jointly to the consideration of the case before us—that, namely, in which there is an *enlargement of the abdomen, offering no resistance on employment of palpation*:—

If the note on percussion be everywhere *clear*, the enlargement is due, in all probability, to gaseous distension of the intestines; the only other condition capable of simulating it being the rare case

in which the uterus is distended with gaseous contents, or that in which an ovarian cyst derives gaseous contents from a communication with the intestinal canal. If, on the contrary, the percussion note be dull, the case is one of fluid effusion into the abdominal cavity (ascites), or of cystic disease of the ovary. It is rare to meet with a form of ovarian disease which would give this combination of signs—a non-resisting abdominal enlargement with dull sound on percussion. When, therefore, by the presence of fluctuation, by palpation, or by percussion, we are enabled to decide that there is fluid, or that there is gaseous distension, the difficulty is so far at an end. The consideration of the further diagnosis of these several cases will come presently.

Results of Percussion or Palpation doubtful.—We must next consider those cases in which nothing very decided has been made out from the employment of the tests applied. The cases are by no means infrequent in which we are unable to make out whether there be or whether there be not a tumour; the results obtained by palpation are not decisive; the sound elicited on percussion is not decidedly clear, nor is it the reverse; what is certain is, that the abdomen is enlarged. In most cases, the difficulty experienced is connected with an unduly fatty condition of the abdominal parietes or of the omentum, one or both, associated with tympanitic distension of the intestines; very frequently there is no tumour actually present, although the observer has the greatest possible trouble to convince himself that this view of the case is the correct one. The gaseous distension of the intestines is masked by the presence of the thick covering of fat spread over them, and a clear sound is consequently not elicited on percussion. This combination of slight tympanitic distension with accumulation of fat in the omentum and abdominal parietes is very commonly met with in women about the period of sexual involution, just at that period of life when the activity of the sexual organs is about to terminate; and when it happens that the patient is desirous of becoming pregnant—a not by any means unusual circumstance—the presence of this combined tympanitic and fatty distension of the abdomen, associated, it may be, with amenorrhœa, leads her to suspect that she is pregnant. Some most instructive cases illustrative of the points here set forth have been related by Dr. Gooch.* An examination of the state of the breasts and of the vagina must be made if the percussion and palpation results are

* See the edition of Gooch, published by the New Sydenham Society, pp. 111 *et seq.*

indecisive, and if there be reasons for suspecting that a tumour is present.

A condition is sometimes met with where the abdomen is enlarged, no actual tumour discoverable, and where the intestines, more protuberant than usual, constitute the enlargement. This condition is met with sometimes during the first two months of pregnancy, while the uterus is yet too small to be felt above the pubes. In such a case, a subsequent examination, after an interval of two months or so, would clear up the difficulty. In all cases of suspected pregnancy, indeed, the element of time is a very valuable assistance to us in our diagnosis. The persistence for six months or upwards of an enlargement of the abdomen, with no signs of a tumour discoverable, would negative the suspicion of pregnancy.

In some cases, the difficulty experienced in the detection of the tumour, no undue amount of fat being present, arises from the fact that there are *great tenseness and resistance,* the distension being, for the most part, uniform and symmetrical; and the difficulty is greater, because this tenseness and resistance preclude us from exploring beyond the surface of the abdomen. We are unable to determine positively whether a tumour be actually present or not. Here the fluctuation test and the results of percussion only are available.

The result of the examination, conducted in the manner now directed, should be to enable the observer to determine whether the enlargement of the abdomen be due to:—

a. Presence of fluid.

b. Gaseous distension; or,

c. Presence of a tumour.

PRESENCE OF FLUID.

In these cases there is wide-spread fluctuation, this being evident over the greater part of the surface of the abdomen.

The conditions between which we have ordinarily to distinguish, and which may be accompanied by the physical signs in question, are:—

Ascites;

Ovarian dropsy;

Ascites combined with presence of a tumour or tumours;

Some rare conditions to be presently mentioned, and not included under either of these three categories.

There are two conditions somewhat difficult to distinguish one

from the other, viz., *ascites, and a single very large ovarian cyst.* They will be discriminated by attention to the following points:—

First, as regards the *size of the abdomen.* This gives us no reliable information. In both ascites and ovarian disease, the size of the abdomen may be very great.

As regards the *shape* of the abdomen, however, there is more to be said. In ascites, the abdomen becomes flattened when the patient lies down, while in ovarian disease this flattening is not observed. In ovarian disease largely distending the abdomen, the floating ribs are pushed outwards; the thorax is thus made to assume a peculiar conical shape. The enlargement of the abdomen in ascites is generally symmetrical, whereas in ovarian disease there is usually a swelling or prominence, more decided on one side than the other. This latter is a distinction which will not at all hold good when there is ovarian dropsy with only one very large cyst. The shape of the abdomen, speaking generally, is more ovoid in ascites, rounder in ovarian disease.

The *condition and appearance of the skin* vary usually in the two cases. In ascites, there is generally a marked enlargement and distension of the superficial veins, wanting in the other case. This is, however, not to be depended upon. I have seen the *lymphatics* enormously distended in an advanced case of ovarian disease, but this condition of the lymphatics is probably the exception rather than the rule. Moreover, I have seen a precisely similar condition of the lymphatics in a case where the bladder was very largely distended from retroversion of the uterus, the uterus being the seat of fibroid growths. The lower part of the abdomen presented, in this latter instance, a most remarkable appearance; there were large cord-like, sinuous lines running upwards, most of them in the direction of the umbilicus. It would not be possible to arrive at any definite conclusion as to the nature of the enlargement, either from the condition of the veins, or from the condition of the lymphatics covering the surface.

There is *fluctuation* both in ascites and in ovarian dropsy. This sign presents some peculiarities requiring notice. In ovarian dropsy it is often very indistinct, and where the abdomen is distended by two or more large cysts, it is unequal at different parts of the abdominal surface. This inequality is of course not noticed in ascites. In cases of ascites, fluctuation is perceived equally well, whatever may be the points between which it is sought for. If, however, there be one very large cyst, the same equality is observed

in cases of ovarian dropsy. In both cases, the degree of facility of perception of this sign varies extremely, this being dependent on the degree of distension present.

Between ascites and ovarian disease the results of *percussion* practised at different parts of the abdominal surface would offer generally, decisive distinctions. Thus, in cases of ovarian disease the fluid-containing cyst travels slowly upwards, displacing the intestines laterally, or thrusting them backwards against the vertebral column, the result being that there is a dull sound on percussion, which may, if the cyst be large enough, extend up to the ensiform cartilage, while there is a clear sound on percussion in the flanks, where the intestines are situated. In ascites, on the other hand, the intestines float on the surface of the liquid, and over the epigastric region there is a clear intestinal note on percussion, while in the flanks there is dulness on percussion. Thus, with the patient laid on the back, the most prominent portion of the abdomen is dull on percussion if ovarian tumour be present, but clear on percussion in ascites. The only exception to this latter statement is when the stomach and intestines happen to be glued down, and prevented rising and so floating on the ascitic fluid, by presence of adhesions. There is an exception to the other statement also, and that is when the ovarian tumour is *associated with ascites*. In such a case, there might be dulness above in the epigastric region, and in the flanks also.

The test as regards dulness or clearness on percussion in the flanks is not an absolute one; for there is nothing to prevent what I have two or three times witnessed—viz. the occurrence of gaseous distension and enlargement of the ascending or descending colon; and supposing such distension to be present in conjunction with ascites, there would be a clear note on percussion in the flanks.

Another distinctive mark between ascitic distension and that due to ovarian disease is the result of percussion practised over the abdomen *in different positions of the patient*. Where there is ovarian cystic disease, the result of the percussion is the same whether the patient be lying on the back or on the side; but in ascites the fluid is generally at liberty to fall by the force of gravity according as the body is placed, and a particular part of the abdominal surface might be clear and resonant on percussion with the body in one position, and dull when it is placed in another. In a doubtful case, this test should be applied.

The previous history of the case generally offers almost conclusive data if rigorously scrutinised. The fact that the abdominal

enlargement began from below, on one side, and with a circumscribed actual perceptible tumour, points to ovarian disease; the absence of such a history would be in favour of ascites. The 'one-sided' origin of the tumour is not, however, so often to be made available as is usually stated. In such cases, as observed by the late Dr. Bright, 'the growth of this tumour is, on some occa-'sions, so unperceived, that, though it may have originated on 'one side, it has already risen into the pubic and even the um-'bilical region; and when the medical man is first consulted its 'lateral origin is with difficulty ascertained. At other times the 'enlargement is at first slow, and after some indefinite period the

Fig. 25.*

'increase takes place suddenly, so that in a few months the whole 'abdomen presents to a common observer the size and appearance 'of pregnancy far advanced.'†

Again, as regards the history, in ovarian disease the enlargement is more often chronic—slower in progress than is the case in ascites; it is, in the case of ascites, attended with greater disturbance of the general health, and, in the latter case, there are generally to be detected signs of serious organic disease of the heart, of the lungs, of the liver, or of the kidneys. Moreover, dropsical effusion into the peritoneal cavity is more often than not associated with similar effusion (anasarca) in the lower extremities. It is in

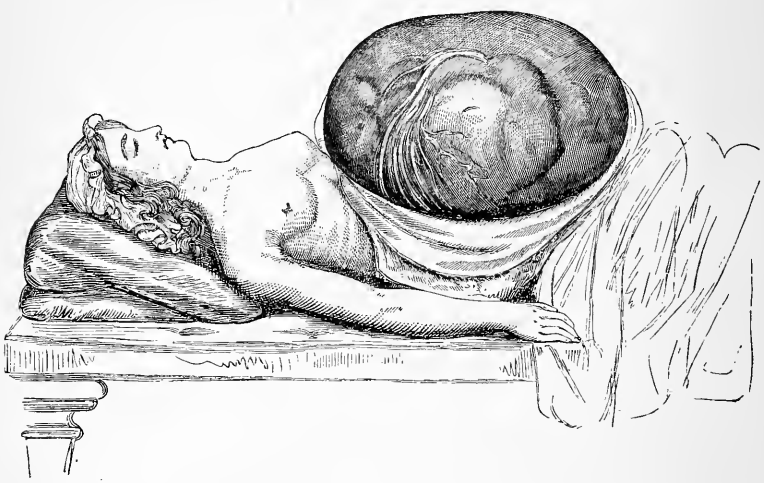
* Fig. 25 (from Bright) shows the general aspect of the abdomen in a case of great distension from ovarian dropsy.

† *Clinical Memoirs on Abdominal Tumours*, New Sydenham Society's ed., p. 63.

the last stage of ovarian disease only—that is, of the *kind* of ovarian disease now under consideration, and not including cases of *cancerous* disease of ovaries—that anasarca of the lower extremities is noticed. The dyspnœa produced by large distension of the abdomen in ovarian disease is generally much less considerable than that attendant on ascitic effusion, because in the latter case the dyspnœa is often of organic, not mechanical origin.

Diagnosis of ascites from ascites with a tumour.—It most ordinarily happens that, when this conjunction of events comes under observation, the tumour is readily perceptible to the touch; and if such were the case, this would remove it altogether from

Fig. 26.*



the category of cases now under consideration—that, viz., in which no tumour is perceptible. But now and then a tumour is present in the abdomen associated with ascitic fluid, so considerable in quantity, that the presence of the tumour is not discoverable, or, at all events, readily so. Hence, a case where there is a tense enlarged abdomen, presenting fluctuation at all points, the fluctuation evidently indicating fluid in the peritoneum, may turn out to be one of the kind here alluded to. Kiwisch alludes to a case of ascites associated with *pregnancy*, where the operation of paracentesis was performed, and the trochar passed into a gravid uterus. Other instances are men-

* Fig. 26, from Bright's work, *jam cit.*, represents a large ovarian tumour, the abdominal covering removed.

tioned in Dr. Montgomery's work. It would appear, at first sight, perhaps, that a very simple consideration of the facts of a particular case would prevent the observer from falling into a similar error; but recorded experience shows that the question is not so easy of solution in many cases. Examination of the uterus from the vagina, examination of the state of the breasts, a careful scrutiny of the circumstances preceding and attending the enlargement, become necessary. Pregnancy may be, as is evident from many recorded facts, very easily overlooked unless enquired after. Thus, a patient the subject of ascites, becoming pregnant, would naturally connect the increasing size of the abdomen with increase in her previous disorder; while the absence of menstruation might be set down by the medical attendant to the same circumstance.

It is to be remarked of these cases of pregnancy combined with ascites, that there is often present a dropsical condition of the lower extremities. In advanced cases of ascites, anasarca of the lower extremities is, as is well known, frequently present, and the case might be not unreasonably looked upon (by one not aware at least of the possibility of the existence of pregnancy) as one of ascites simply. Dr. Montgomery relates a case where the abdominal parietes were so exceedingly tense, and the quantity of interposed water so considerable, that the outline of the uterus could not be detected, nor the fœtal movements felt, although the patient was seven months pregnant.* This circumstance alone is sufficient to indicate the nature of the difficulties which are liable to be encountered. There is no doubt that the mistakes which have been made in diagnosis have arisen from the observer overlooking the possibility of the existence of pregnancy. It is therefore very important to recollect, in all cases where the woman is in a state for having children, and has an enlarged abdomen, that it is not sufficient at some previous period to have established the diagnosis of ascites. The diagnosis must be made afresh from time to time, and the state of the abdomen must undergo regular investigation; and this is more especially necessary if any operative measures, such as tapping, be contemplated. The observer should always make it a practice before going further to demonstrate to himself that the patient is not pregnant.

Ascites may be associated with other tumours. One of the most common cases is perhaps that in which there is an *ovarian*

* *Op. cit.*, pp. 139, 149, 162.

tumour together with ascites. Here the remark applies equally as in the case of pregnancy, that usually the distension is not so great as to prevent recognition of the tumour. Still it may be so. This association of ascites and ovarian tumour is more generally observed in cases where the ovarian tumour is of a malignant character than where simple cystic disease is present.

Mesenteric tumour may be associated with ascites, and may be so situated that it closely simulates an ovarian tumour. In such a case, as I have myself had practical proof, an exploratory incision into the abdomen may be the only means for deciding the nature of the case.

In an advanced stage of the disease, ascites, combined with *hydatid disease of the liver and peritoneal cavity*, may give rise to great distension of the abdomen. The history of such a case, but chiefly the presence of great enlargement of the liver, would point to the true conclusion, or, at all events, would afford indications sufficient to negative the idea that the enlargement of the abdomen was due to disease of any of the generative organs. Where a tumour is recognisable, the difficulty in diagnosis is necessarily not so great as in the case above supposed.

Lastly, respecting the diagnosis of these cases of extreme distension of the abdomen, where a tumour is suspected to be present together with ascitic effusion, it is to be remarked that, if the operation of tapping be performed, it is afterwards very easy to substantiate the presence or absence of such tumour. And, in point of fact, in some cases of ovarian dropsy associated with ascites, a preliminary operation of this kind may be necessary to enable us more nearly and more conveniently to ascertain the size, position, and relations of the tumour.

Some rare conditions capable of simulating ascites or ovarian dropsy.—There are certain conditions very rarely met with, but which require to be mentioned, inasmuch as they may give rise to a considerable distension of the abdomen, and may present physical signs such as those observed in cases of ascites, or of ovarian dropsy, or of tumour with ascites. One of the conditions in question is *extreme distension of the bladder* from prolonged retention of urine. A case will be found mentioned by Dr. Gooch,* in which retention of urine was associated with pregnancy, the distended bladder assuming a flattened form, owing to the resistance of the gravid uterus behind it; there was fluctuation, and the case was, in fact, assumed to be one of

* Quoted also by Montgomery, *op. cit.* p. 324.

'dropsy.' The case was originally related by Dr. Lowder, who stated that paracentesis was performed, that the trochar passed through the bladder, through the wall of the uterus, and even into the head of the child. Here the mistake probably arose from the presence of fluctuation over a considerable surface; but if percussion had been practised near the lumbar regions of the abdomen, or if even the suspicion of pregnancy had crossed the mind of the observer, the mistake might probably have been avoided.

In some very rare cases, *extreme distension of the uterus by fluid associated or not with pregnancy* has simulated ascites. The causes of distension of the uterus by fluid will be more fully considered further on. Here it is sufficient to call attention to the fact.

Cystic Disease of the Abdomen, not of Ovarian Character.—In some rare cases, large cystic growths have been met with simulating ovarian dropsy. They will be further described in another place. It is just within the limits of possibility that such a case might, the cyst being of large size, resemble one of ascites.

Gaseous distension.—When the note on percussion is tympanitic at any particular part of the surface of the abdomen, this indicates necessarily the presence of gaseous distension at that spot. When the greater part of the abdominal surface presents this condition, the distension in question generally proceeds from the presence of gas in the intestines, in the stomach, or both. This form of *tympanitis* is witnessed in the advanced stage of fevers of various kinds, in puerperal fever, and under other circumstances. The comparatively sudden occurrence of the enlargement, the perfectly normal state of the abdomen previously, and the results of physical examination generally, render the diagnosis a matter of no difficulty.

Cases are very common in which the surface presenting a tympanitic note on percussion is more limited. These cases need not be considered, however, just at present; and they will engage our attention in speaking of the diagnosis of 'tumours' of the abdomen.

Cases simulating presence of a tumour.—There are a very considerable number of cases on record in which the event has proved that no tumour could have been present, and in which a very positive, but erroneous, diagnosis has been made to the contrary, often with very serious results to the patient. Facts of

this kind will be found recorded in the work of Dr. Montgomery. One of the most extraordinary was the case of a woman who, in the year 1828, was operated upon in Berlin, under the idea that the case was one of extra-uterine pregnancy: on cutting into the abdomen, no tumour, and no enlargement of any viscus, was detected. The abdomen has been opened with the intention of removing ovarian tumours, no tumour of any kind being discoverable. And the case is very far from uncommon in which women are supposed to be pregnant, and to have a tumour in the abdomen, when the event completely falsifies the diagnosis. In many cases, where such mistakes have been made, it is easy to see that sufficient care was not taken in substantiating the presence of a tumour, in defining its limits, &c.; but in some instances the appearances present were evidently calculated to mislead.

So-called 'Phantom' Tumours.—The cases which present most difficulty are those in which an abdominal tumour is simulated, in hysterical women, the abdominal muscles being contracted in such a manner as to give the impression of a tumour to the hand of the observer. The tumour, however, has this peculiarity: 'If,' as Dr. Montgomery remarks, 'the patient 'can be made to forget that she is under examination, by com- 'pletely diverting her attention, as by keeping her in conversation 'on some subject unconnected with her own case or state, while, 'at the same time, the hand is kept pretty firmly pressed on the 'abdomen, the tension gradually relaxes, the size diminishes, and 'all sensation of a tumour is lost.'* Change of position may succeed in producing this disappearance of the tumour; but by giving chloroform, as was first pointed out by Sir J. Y. Simpson, the reality of the tumour is most completely tested. While the patient is under chloroform, the hand is allowed to sink inwards at the point where previously the tumour appeared to be situated. When the abdomen is covered with an undue quantity of fat—a condition often also associated with presence of fat in the omentum—the difficulty the observer experiences in satisfying himself that no tumour is actually present becomes more considerable; and chloroform may in such cases be quite essential to the making of the diagnosis. It is not absolutely certain how the deceptive appearances of a tumour are actually produced, but it is probable that in most cases they are due to partial contrac-

* *Op. cit.* p. 398.

tions of the recti abdominis muscles, a particular segment of the muscle being in a state of chronic contraction, and forming a rounded mass under the hand.

With a careful exercise of the various precautions recommended, the number of cases in which there will be a difficulty in ascertaining that a tumour is actually present, or the reverse, should be inconsiderable; and the observer who is forewarned respecting these cases of phantom tumour, will find the recognition of their true nature comparatively easy.

Having cleared up any doubt as to whether there be actually a tumour present or not, the further steps to be taken will now be considered.

It may perhaps be necessary to observe, also, that it is not intended to discuss at length the differential diagnosis of *all* tumours of the abdomen. So far as is necessary to the elucidation of the questions which do fall within our province, the subject must be treated generally; for, until a certain amount of knowledge of the case before us has been acquired, we cannot tell whether we have to do with a disease of the liver, of the spleen, of the uterus, ovaries, &c.

It will be found convenient for purposes of diagnosis to begin with determining, by physical examination of the tumour, under which of the following heads it should be placed; and, this elementary diagnosis having been made, to pursue further enquiries in the direction thus necessarily indicated:—(A) The tumour proceeds from, or is connected with, the pelvic cavity; (B) The tumour is not connected with, or not distinctly traceable into, the pelvic cavity.

(A) TUMOURS WHICH ARE TRACEABLE, OR MAY APPEAR TO BE TRACEABLE, INTO THE PELVIS.

Enlargement of the uterus, from pregnancy, fibrous tumour, &c.
Ovarian cystic disease or tumour.
Peri-uterine hæmatocele.
Distension of the urinary bladder.
Pelvic cellulitis and abscess.
Fæcal tumour.

The more uncommon causes are:—

Enlargement and distension of Fallopian tube.
Extra-uterine pregnancy (usually).

Sub-peritoneal cysts.
Cysts or solid tumours in omentum.
Fibrous, cancerous, or osseous growths from pelvic bones.
Hydatid tumour.
Enlargement of spleen (when the spleen is so enlarged as to extend into the pelvis).
Cancer of peritoneum.
Cysts or tumours connected with the kidneys.
Distension of ureter.
Enlargement of liver.
Retained encysted fœtus (which may also come under the next head (B).
Cysts of the broad ligament (Wolffian cysts).

(B) TUMOURS NOT TRACEABLE, NECESSARILY SO AT LEAST, INTO THE PELVIS.

Disease of the liver, giving rise to enlargement of the organ, hydatid tumour, &c.
Enlargement of the spleen.
Hydatid tumours in cavity of abdomen.
Fæcal tumour.
Fibrous tumour of the uterus, pedunculated.
Cancer of peritoneum.
Fat in omentum.
Enlargement, &c., of kidneys.
Movable kidney.

It will be seen that while some of the tumours mentioned come under both heads, being traceable or not into the pelvis according to circumstances, the great majority of them lie distinctly on one or the other side of the line of demarcation. It will generally be found comparatively easy to determine the series to which the tumour before us belongs. Commencing at the most prominent part of the tumour, and pressing gently but firmly through the abdominal parietes on its surface, the continuity of the surface in question is to be traced in all directions, and the limits of the same accurately made out. Thus, a tumour, the most prominent part of which is just above the umbilicus, may be traced upwards from that point to the margin of the ribs on the right side, being at that point not separable from the liver; while, on endeavouring to trace it downwards, it may be found to cease abruptly at the

umbilicus, or a little below it. Such a tumour would belong to the second of the above series. The fact that the tumour ceases at the point indicated may be made out simply by palpation, the abdominal wall being lax or thin; but palpation alone may not be sufficient to establish this when the opposite state of things prevails, and percussion is then of service. Thus—to take again the above illustration—the tumour being hard, firm, and dull on percussion superiorly, the fact that at a particular point this dulness is exchanged for a tympanitic note, this tympanitic note being identical with that obtained over the lower part of the abdomen generally, would lead to the desired conclusion as to the lower limit of the tumour. Again, in the case of a tumour presenting the fluctuation sign, the limit of the fluctuation would of course indicate the limit of the tumour; it would be necessary to recollect that, in the case of a tumour of a composite character, fluctuation might cease at a particular point without this necessarily indicating that this was the boundary of the tumour. And with reference to this particular sign, fluctuation, there is this general caution to be given—that it by no means follows, because a tumour contains fluid, that fluctuation should be perceivable: when the walls of the cavity containing the fluid are very tightly stretched, fluctuation may be entirely absent. Lastly, in determining whether the tumour proceeds or not from the pelvis, the history of the case may give important information. This information, however, is very often found to be either wanting, or so devoid of accuracy as to be practically worthless.

Having proceeded so far with the diagnosis of a tumour of the abdomen as to have ascertained that it clearly belongs to one or other of the series—that is to say, either traceable into the pelvis, or not so traceable—we may advance still further our diagnosis by adopting one of two or three procedures:—(*a*) By an attentive consideration of the *history* of the appearance and growth of the tumour and the attendant phenomena; (*b*) by a careful comparison and estimation of the data derived from physical examination of the tumour itself, by palpation, percussion, auscultation, &c.; or (*c*) by a combination of these two procedures.

The diagnosis is usually arrived at, by experienced observers, by a mental process of the following kind: The general facts relating to the history of the case induce the observer to make a presumptive diagnosis at once. A theory is adopted, and this theory is forthwith tested by a more particular examination; and if it be found to break down under that examination, another theory is taken up,

to be tested in like manner, until a result is arrived at which is considered satisfactory. A beginner should postpone forming a theory on the matter at all until all the data available have been got together, and can be compared in such a manner that undue prominence and significance be not given to particular ones among them.

TUMOURS TRACEABLE INTO THE PELVIS, MORE RARELY MET WITH.

Enlargement of the liver to such an extent that the tumour reaches to the pelvis is exceedingly rare. In a case of this kind, a careful examination shows a perfect continuity of the tumour with the liver above. The tumour is hard, resistant. The history of the case is agreeable with the theory that the tumour originated in the liver. But although simple enlargement to a considerable extent is rare, cases are not so uncommon in which a tumour growing from the liver extends downwards even as far as the pelvis, or which is, at all events, apparently continuous with tumours which do so extend into the pelvis (see next paragraph).

Hydatid disease of the liver may give rise to a tumour extending from the liver into the pelvis, and the abdomen may become enormously distended by the parasitic growth in question. A very remarkable case related by Dr. Bright* may be referred to, although the case in question was that of a male, as showing how far the disease in question may go. The nature of the case was clearly evident during life, the hydatids forming 'round, well-defined elastic tumours' all over the abdomen, and in places forming elevations visible to the eye. The patient's age was 14. The hydatids were first developed in connection with the liver. The first sign of disease was the feeling a hard lump in the right side below the false ribs. The disease rapidly progressed, general emaciation and constantly increasing abdominal enlargement being the chief symptoms. There was dulness on percussion all over the abdomen, except at one part, just to the left of the umbilicus. It would seem difficult to avoid recognising the nature of an abdominal enlargement due to this cause; an ovarian tumour reaching to the liver, and presenting rounded projections due to the contained cysts, might be possibly mistaken for it by an inexperienced observer. But an ovarian tumour growing to such a

* *Op. cit.* p. 30.

size as this would generally have a history essentially different. The ovarian tumour would have grown from below upwards, and at some previous time would have been limited to the lower part of the abdomen. This distinction may fail in some cases. The physical characters of an ovarian tumour of this magnitude will be given further on. Here also may be mentioned an interesting case related by Dr. Bright, in which the tumour present was due to hydatids, but closely simulated an ovarian tumour. The woman was 54 years old, and presented an enlargement of the abdomen, dating from nine or ten years previously, but only very obviously noticed for three years. The abdomen 'was greatly enlarged; the 'upper two-thirds occupied by an irregular tumour, indistinctly 'fluctuating, and, in various parts, somewhat tender on pressure: 'the lower part of the abdomen was also occupied by a fluctuating 'tumour, apparently a large cyst arising from the pelvis. The 'intervening space was soft, and was the only part which gave a 'clear or tympanitic sound on percussion.' A drawing accompanies the description of the case. 'From its peculiar and irregular 'form,' Dr. Bright concluded 'that it consisted either of hydatids 'extensively distributed, or was an ovarian tumour; and if the 'latter—which, from its very singular form, and more particularly 'from the existence of the upper portion so separated from the 'lower, I could scarcely believe—I supposed that it must be one 'of those complex and malignant forms of disease. . . .'* The case turned out to be one of hydatids. There were two large cysts one above and one below, the upper one incorporated with the liver, and between and in front of the two was stretched the transverse colon. A case of this kind was recently under my observation in University College Hospital, first under my own care and then under Sir William Jenner. Considerable doubts as to its nature were dissipated by an exploratory puncture. It was an enchondromatous tumour of very great size. A noticeable feature in this instance was the growth of a portion of the tumour backwards towards the loin, a position which, it may be perhaps stated, is never taken by an ovarian tumour. Cases of this kind are extremely rare.

Cancerous disease of the abdominal viscera, above the pelvis, may give rise to a tumour which is found to extend downwards as far as the pelvis. Practically, however, such a tumour can hardly be confounded with any of the tumours with which we are more particularly concerned. In *cancer of the kidney*, the lower margin

* *Op. cit.* p. 13.

of the tumour would, even in extreme cases, be felt above the brim of the pelvis, unless distension of the abdomen from ascites prevented it. '*Colloid cancer of the omentum*,' says Dr. Walshe, 'spreading like a sort of apron in front of the intestines, gives 'rise to dull percussion sound in proportion to its extent.'* This is a very rare disease. *Cancer of the post-peritoneal cellular tissue*, also a very rare affection, may give rise to a tumour slow in growth, and which may moreover grow downwards into the pelvis.† The presence of nodules of a cancerous nature, perceivable in the abdominal walls externally, is an important diagnostic sign, although it is one not by any means always observed.

Enlargement of the spleen, the organ attaining such a size as to extend into the pelvis—an occurrence which must be very rare—could hardly be mistaken for an ovarian or uterine tumour, if the smallest pains were taken in investigating the history of the case.

Cysts or Tumours connected with the kidneys.—A case is detailed by Dr. Bright, in which a large cyst containing puriform matter, and connected with the left kidney, simulated disease of the ovary. The patient was married, æt. 34. 'For about three 'years she had a tumour on the left side of the abdomen; the 'exact situation of the part at which it commenced is not ascer-'tained, but it appeared to have been sufficiently low down to 'have excited a suspicion that it depended on the ovary.' After death, 'a large but soft tumour was seen occupying the greater 'part of the left lumbar and iliac regions.' It was an enlargement of the kidney, and had, when cut into, the appearance of a membranous cyst, the walls of which were an eighth of an inch thick. It contained dirty, discoloured, watery pus.‡ I saw some time since, with Mr. Scott, a case of very considerable abdominal enlargement simulating multilocular ovarian disease, which proved to be, as I have since heard, one of cystic disease of the kidney.

Mr. Spencer Wells,§ in a pamphlet 'On the Diagnosis of Renal from Ovarian Cysts and Tumours,' has described cases illustrative of this important subject with conclusions based thereon. In one of the cases a cystic degeneration of the left kidney was taken to be a cyst of the left ovary. It was very large, occupied the whole left side of the abdomen, and had been previously tapped,

* *Op. cit.* p. 310.
† *Op. cit.* p. 311.
‡ *Loc. cit.* p. 223.
§ *Dubl. Quart. Med. Journ.*, Feb. 1867.

and a quantity of dark discoloured fluid, like pea-soup, removed. The whole aspect of the case much resembled that of ovarian disease, but a cord passed over the middle of the tumour, which was found to be the descending colon. Mr. Wells gives another case of soft cancer of the right kidney in a girl four years old, which had been supposed to be ovarian, but which was rightly diagnosticated. Also a case of pyonephrosis of the right kidney, due to impaction of calculi in the ureter, which was relieved by an abdominal tapping. Resuming the diagnostic data in such cases, Mr. Wells points out that ovarian tumours are generally in *front* of the intestines, renal ones behind them, but this rule is open to exceptions; that discovery of intestine in front of a doubtful tumour should induce examination of the urine, blood, pus, or albumen being generally detected in renal disease; that the intestine may not be recognised as such unless care be exercised; that fluid discharged from a doubtful cyst should be carefully examined for ordinary products; that the renal disease grows downwards, the ovarian upwards; that it is only a very small ovarian tumour with a long pedicle which could be mistaken for a floating or movable kidney.

In cases of *distension of the ureter*, a tumour may be detected on one side near the vertebral column, but it does not appear that such a tumour has ever been confounded with tumour of pelvic origin: ordinarily the circumstances are such that tumours connected with the kidneys or ureters are not confounded with those originating in the pelvis.

Sub-peritoneal Cystic Tumour.—A very rare and exceptional case is that in which cysts situate externally to the peritoneum grow and form tumours capable of simulating ovarian cysts. Such a case is alluded to by Kiwisch.* The tumour formed gradually, attained a large size, was repeatedly tapped, and large quantities of fluid evacuated. The patient's age was 20. And the tumour first appeared after suppression of menstruation, the suppression occurring very soon after menstruation had begun. After death, three large tumours, one composed of a large cyst, and the two others of cysts together with fibrous tissue, were found behind the peritoneal membrane, occupying the lumbar and hypochondriac regions, and extending down into the pelvis.

Somewhat analogous to this is a case reported by Mr. Safford Lee,† in which a large tumour of the abdomen had existed for

* *Klin. Vortr.* bd. ii. (by Scanzoni), p. 327.

† *On Tumours of the Uterus, &c.* p. 124.

twenty-five years. It at last completely filled the abdomen and killed the patient. It was found to have commenced on the left side, just under the pancreas, but below the peritoneum, so that it rested on the posterior walling of the abdomen. A narrow pedicle, six inches long, of the size of a quill, connected it with the uterus. It was filled with turbid fluid, balls of fat and hair, calcareous matter, and a mass containing teeth and bones, strongly resembling an imperfect fœtus. This appears to have been a case of 'included fœtus.'

Cysts of Omentum.—Mr. Safford Lee reports a case which was under the care of Dr. A. T. Thompson. The patient had been tapped forty-eight times. The tumour began on the right side of the abdomen. After death it was found to have originated in the omentum close by the pancreas, and was attached by a long thin portion to the uterus, but was entirely unconnected with the ovaries. At the upper part of the abdominal cavity, attached to the peritoneal surface, were a number of well-defined cysts containing a clear fluid.*

Retained Encysted Fœtus.—In some very uncommon cases, the fœtus, the product of an extra-uterine pregnancy, dies, having attained a certain stage of maturity, and remains, enclosed in a kind of cyst, in the abdomen of the mother, for a time which varies from a few weeks to many years. The history of these cases is necessarily peculiar and characteristic. The woman states that at a certain time she was pregnant, that the symptoms of pregnancy advanced pretty regularly, that at the time pregnancy should have terminated pains set in, and these, after lasting a certain time, went off, no delivery having occurred, and that the tumour which is felt through the abdominal walls dates from the period in question. Presence of such a tumour is not incompatible with further pregnancy and healthy delivery, instances being known of women bearing mature and healthy children, the mummified body of the extra-uterine fœtus still remaining within the abdomen. The tumour in these cases is usually low down in the pelvis, or at all events partially so, and it is usually recognisable by vaginal examination.

Fibrous, cancerous, or osseous tumours, growing from the pelvic bones inwards, may give rise to tumours perceivable through the abdominal walls. The firmness of these tumours, their want of mobility and other physical characters, render their

* *On Tumours of the Uterus, &c.* p. 123.

diagnosis from other more common abdominal and pelvic tumours easy. They are excessively rare.

Of the conditions which have now been mentioned, viz., enlargement of the liver, hydatid disease of the liver, cancerous disease of the abdominal viscera, or in the abdominal walls, enlargement of the spleen, cysts, &c., originating in the kidneys or uterus, cystic tumours behind the peritoneum or in the omentum, retained encysted fœtus, fibrous or osseous growths from the pelvic bones, some are exceedingly rare, others are more common. One distinction between these tumours and those originating in the generative organs is very important, and one which can generally be relied upon, viz., that when the tumour originates in the generative organs, the vaginal examination shows some displacement, or some abnormal condition, of the uterus, or is the means of detecting a tumour in the pelvis. This negative evidence is of great weight.

The tumours next to be considered are met with rather more frequently.

Tumours of the Fallopian Tubes.—The conditions capable of giving rise to tumours of the Fallopian tubes are, distension of the tubes by serous, purulent, or bloody fluid, and Fallopian pregnancy. These conditions have been already alluded to (see p. 95). When these tumours attain a certain size, they are perceivable also by examination of the hypogastric region of the abdomen, and even when they are of no considerable size, they may be felt in this position if the abdominal walls be thin and non-resistant. Tumours of the Fallopian tubes exceeding the size of an apple are rare, but it should be known that they *may* attain so large a size as to be capable of being mistaken for ovarian tumours. The tumour is generally elongated or pyriform in shape, and movable, and there may be a tumour on both sides. The position in which the tumour is felt is just above the groin—behind and below Poupart's ligament. The history of the progress of the tumour is generally diagnostic, to a certain extent, of its nature. Cases of tubal pregnancy are very rarely diagnosticated, inasmuch as rupture of the tube takes place before anything wrong is suspected; and if the pregnancy proceed to a later period, the case is usually looked upon as one of normal gestation. There are no physical signs by which a case of very extreme dropsical distension of one tube could be certainly distinguished from an ovarian tumour. In such a case, the history would probably throw some light on the subject.

TUMOURS TRACEABLE INTO THE PELVIS, MORE COMMONLY OBSERVED.

Pelvic Cellulitis and Abscess.—A tumour rising up, sometimes a considerable distance, above the pelvic brim, may be caused by inflammation originating in the pelvic cellular tissue, generally following labour, or abortion, or wounds or injuries of the pelvic viscera. See 'Pelvic Cellulitis.'

Peri-uterine Hœmatocele.—The tumour arising from this may present features very much like those observed in pelvic cellulitis. The diagnosis will be considered in the chapter on 'Peri-uterine Hæmatocele.'

Fœcal Tumour.—A tumour due to fæces accumulated at any particular part of the intestinal tract, may extend into the pelvis and simulate a tumour growing from that part. A fæcal tumour is known by its irregular shape, by its doughy feel; it is dull on percussion at one part, and clear at another (from presence of flatus); the state of the bowels also is peculiar, great costiveness being present; and, moreover, the tumour disappears, or partially so, on administration of purgatives. Dr. Walshe gives an important caution, however, in reference to the uncertainty of such deduction, viz., that occasionally the solid matters cling to the wall of the bowel, leaving a passage in the centre; the tumour remains, and is a fæcal tumour, while the patient is passing daily liquid stools.*

The most important of the tumours traceable into the pelvis remain for consideration, and we have now to determine whether the tumour which is present be due to

Enlargement of the uterus, including pregnancy, normal and abnormal, tumours, &c., of the uterus;

Ovarian tumour; or

Distension of the bladder.

The tumours of the abdomen, respecting which a diagnosis is most frequently required, belong to this series, the cases not so included being, comparatively speaking, very few in number.

Distension of the Bladder.—The tumour due to this cause is always (in uncomplicated cases) of recent formation, and it dates back but a short time. A very instructive case, and one illustrating well the nature of the difficulties liable to be met

* Walshe, *op. cit.* p. 315.

with in determining this point, came under my care at St. Mary's Hospital some years since. The case was that of a woman æt. 46, married, the mother of one child, 17 years old. She presented herself at the hospital with an enlargement of the abdomen of three weeks' duration, and it was supposed by those who had seen her that there was a tumour present. Her legs were very œdematous, the abdominal wall externally presented enlarged lymphatics with great puffiness of the skin covering the hypogastric and inguinal regions. There was a distinct well-defined tumour rising from the pelvis and reaching to three inches above the umbilicus. This tumour was not tender. It was hard, firm, not fluctuating, and gave the impression at first sight of being an ovarian cyst. Vaginal examination was difficult, owing to the extreme pain it occasioned; the vaginal walls were protruded in a swollen œdematous state, and in the form of tumours, through the vulvar aperture. The os uteri, however, was felt to be high up behind the pubes, and a round, firmer, hard tumour occupied the pelvis itself. There was, judging from the history of the case, no evidence of pregnancy. She stated that she passed water freely, and had done so for the last three weeks. The examination *per vaginam* was so difficult as to be unsatisfactory; the *primâ facie* view of the case was that it was an instance of rapidly growing ovarian cystic disease. As a preliminary to further exploratory measures, a catheter was introduced into the bladder. The discovery was then made that the tumour was due to an enormously distended bladder, and nearly six pints of urine, slightly, but not greatly offensive, were drawn off, the tumour above the pubes entirely subsiding. The further information was then obtained by examination that the uterus was enlarged, that a large fibrous growth occupied the posterior wall of this organ, that the whole organ was retroverted in the pelvis, and that this was the cause of the retention of urine. The fibrous growth was situated chiefly external to the uterine wall, and altogether the uterus was about the size of the gravid uterus of between three and four months. Further enquiry now elicited some interesting facts in the history of the case, but which had not been alluded to by the patient until they were specially asked for. It appeared that three days before the abdomen began to swell she had slipped down stairs over five or six steps, and strained herself in so doing, but she took no notice of this, as no immediate inconvenience resulted. There was a little difficulty in micturition, but nothing marked, and the retention had been

disguised by the fact that there had been a more or less constant overflow. The involuntary micturition was naturally enough misinterpreted by the patient, and was not mentioned until specifically enquired after. The uterus had become retroverted, the tumour sinking down into the sacral concavity, and the pressure and dragging on the neck of the bladder occasioned the retention.

The particulars of this case sufficiently illustrate the nature of the enquiries, and the mode of examination necessary to be made. The case just described is somewhat analogous to others which have been recorded. It might be said perhaps that the duration of the tumour in the case above related (only three weeks) would at once have settled the question as against ovarian disease; but in some cases it has been found that ovarian disease progresses with extreme rapidity. Kiwisch says, 'We have seen a cyst, from 'the size of a fist to that of a child's head, appear in the course 'of fourteen to twenty-four days, accompanied by severe local and 'general symptoms.'* Further, in dealing with the statements of patients as to the duration of a particular condition, we are always treading on uncertain ground. There was nothing, for instance, in the above case to prove that the duration of the hypogastric tumour dated back from only three weeks previous. It might well have existed, although much smaller, for some time antecedently.

The diagnosis between ovarian and uterine tumours will be considered at length in the chapter on 'Diseases of the Ovaries;' a few remarks only on the subject will now be made.

The *distinction between an ovarian and a uterine tumour*, the size of the tumour not exceeding that previously stated, is by no means easy by the abdominal examination alone. The distinction is much easier when the tumour is more considerable in size. As a general rule, hardness and slow growth of the tumour are against the idea of ovarian disease. Thus, a rounded firm tumour, reaching to the umbilicus, and which had been slowly increasing for two or three years or more, would be far more likely to be uterine than ovarian; and a very large tumour in the abdomen of slow growth may be considered uterine, if it be universally hard and firm; if it be soft or give evidence of fluctuation at certain points, it is almost as certainly ovarian.

There are other means, however, to which we can resort in order to satisfy ourselves whether a given tumour in the hypogastric region be uterine or ovarian, viz. the employment of a

* Translation by Clay, p. 112.

vaginal examination, and by combining this with an abdominal one. Further, the use of the sound is often of the most essential service in guiding us to a right conclusion.

By means of the vaginal examination we are able, in many instances, to assure ourselves that the tumour above the pubes is continuous with a tumour which we recognise as that of the uterus by means of the vaginal touch. Such is the case, for instance, when the woman is pregnant, or when the uterine cavity is enlarged and distended by fluid or other contents. By pressing upwards from the vagina we can frequently also, under such circumstances, establish the continuity of the two tumours—the vaginal and the hypogastric. The mere fact, however, that motion is thus communicated is insufficient to establish the identity of the two. Thus, when an ovarian tumour is closely applied to and pressing down the uterus, motion would necessarily be communicated to the tumour above by pressure on the uterus below. And sometimes the relations of the uterine orifice below are such that it is no easy matter to determine whether a hard mass felt from the vagina is uterine or ovarian. It is in such cases that the sound is employed with such good results as regards the diagnosis, for by establishing the fact that the uterine canal lies in a certain direction, important deductions as to the nature of the tumour follow.

The diagnosis, as made out by an abdominal examination, should be corrected and checked, so to speak, by a vaginal one; a positive opinion should hardly ever be given as to the nature of any case, however clear it may appear to be, simply on the results obtained by the former method of investigation. Mistakes, ludicrous or serious, or both, have not by any means unfrequently followed neglect of this important rule.

Diagnosis of the various forms of Enlargement of the Uterus.

In the chapter on 'Pregnancy' the diagnosis of the principal causes of enlargement of the uterus will be considered at length. Here these various causes of enlargement of the uterus may however be mentioned, and what may be termed the elementary diagnosis pointed out.

The causes of enlargement or tumour of the uterus are the following:—

Simple hypertrophy of the uterus.

Pregnancy, normal and abnormal.

Uterine polypus and fibroid tumour of the uterus.

Retention of the menstrual or other fluid in the uterine cavity (hæmatometra and hydrometra).

Gaseous distension of uterus (physometra).

Abscess of the uterus.

Tubercle of the uterus.

Carcinoma of the fundus uteri.

Fibro-cystic tumour of uterus.

The least common of these pathological conditions are those which have been placed last on the list. Carcinoma of the fundus uteri and tubercle of the uterus are very rare. The same remark applies to abscess of the uterus. Accumulations of gas in the interior of the uterus are very rarely witnessed. Accumulations of fluid in the uterus, unconnected with pregnancy, do not often come under our notice; in retention of the catamenial fluid, a condition now and then present in young women who have never menstruated, more rarely in others, the uterine tumour due to such catamenial accumulation may attain a very considerable size. Simple hypertrophy of the uterus, although not an uncommon condition, does not produce more than a slight increase in the size of the uterus as felt above the pubes; a tumour reaching beyond two inches above the pubes might be concluded not to be due to simple hypertrophy of the uterus. The most common conditions met with, and giving rise to uterine tumour, are *pregnancy*, *fibrous tumour*, and *fibrous polypus of the uterus*. By far the majority of tumours in the abdomen of any considerable size, and which are uterine in their nature, are found to be constituted by the presence of one of these three conditions mentioned; and in practice therefore the diagnosis of these, one from the other, is of the most importance. Here it may be mentioned that the diagnosis of these three conditions, one from the other, is far easier than the diagnosis of one or each of them from certain tumours of the ovaries, as will be presently shown.

Distension of the Uterus by Fluid.—The cases coming under this head are some of the most important with which we have to deal, and their diagnosis possesses great interest. There is this general remark to be made concerning them that, as regards the shape and relations of the organ, the uterus usually expands under the distending force pretty much as in the case of pregnancy. If the distension be at all considerable, the tumour produced by it is readily recognised above the pubes, and also from the vagina.

Fluctuation is usually present when the tumour is large, but it is not a sign the presence of which can be greatly depended upon. One form of distension to which the uterus is liable, is that produced by *retention of the menstrual fluid*, in young women who have never menstruated. In women who have menstruated also, menstrual retention may occur in consequence of the *os uteri or the vaginal canal becoming occluded*, as after parturition, or by the presence of tumours in the canal of the cervix uteri. (See 'Examination of Uterus from Vagina.') Then there are cases in which *purulent collections* from various causes take place in the uterus, or in which fluid of a more or less *serous* character is found distending the organ. The latter class of cases are those which are more particularly described by authors under the term 'hydrometra.' Lastly, cases of *pregnancy*; for although, normally, the amount of fluid in the uterus under such circumstances does not entitle the 'enlargement of the uterus due to pregnancy' to be considered in this place, yet occasionally the quantity of fluid present in the uterus, together with the fœtus, is very considerable indeed, and it has even been sufficient to obscure the diagnosis of pregnancy in some instances.

The diagnosis of these various forms of distension of the uterus is generally to be made out by a careful consideration of the attending circumstances and of the history of the case. They have all of them this in common, that menstruation is absent, a necessary condition of fluid distension of the uterus being closure of the outlet for the menstrual fluid. [The only possible exception, and that only an apparent one, to this statement, is in the case of cancerous disease of the lower part of the uterus occasioning purulent distension of the cavity above, and at the same time, possibly, giving rise to a sanguineous discharge below.] The symptoms produced by menstrual retention in young women who have never menstruated will be found described in the chapter on 'Amenorrhœa.' The physical signs are identical with those of early pregnancy, so far as the abdominal examination is concerned, but the vaginal examination throws light on the matter by revealing the presence of an imperforate hymen or other occluding barrier to the escape of the menstrual secretion.

Enlargement of the uterus due to menstrual retention in women who have menstruated does not very frequently come before us clinically, for the retention rarely proceeds to such a degree as to give rise to a considerable enlargement of the uterus. The uterus

may be found as large as a gravid uterus of four months, or even larger.*

We may have purulent distension of the uterus from fœtal remains undergoing decomposition in the uterus, or from cancerous disease of the organ, for cases are on record in which pregnancy having proceeded regularly up to a certain point no delivery of a fœtus has occurred. Such may be the origin of a purulent collection in the uterus. The so-called cases of *hydrometra* are also rare, and their diagnosis rests chiefly on the facts that the uterus is distended with fluid, that this is not due to pregnancy, that menstruation is absent, and that the course of the affection is slow and chronic. Moreover, it has been observed chiefly in women somewhat advanced in years. The degree of the distension in some recorded cases has been very considerable. These cases would be distinguished from cases of ovarian tumour by the fact that the uterus is the organ enlarged, also by the absence of menstruation, though this latter would be no guide in a woman past the climacteric age. Judging from recorded experience, the true nature of the case might be very readily overlooked. Distension of the bladder could hardly be confounded with it; if any doubt existed, the use of the catheter would be the means of removing it.

In cases where the woman is pregnant, but the *quantity of liquor amnii is very excessive*, it is just possible that on the first view of the case some difficulties might present themselves in the way of the diagnosis. A slight investigation of the history of the case, its progress and symptoms, would very shortly indicate the true explanation of the matter, and the signs of pregnancy revealed by a vaginal examination and otherwise would generally be conclusive as to the presence of that condition. Cases of this kind have been occasionally rendered additionally obscure by the presence of dropsical effusion in the cavity of the abdomen.

ABDOMINAL TUMOURS NOT DISTINCTLY TRACEABLE INTO THE PELVIS.

In the previous remarks the diagnosis of tumours traceable into the pelvis has been pointed out. To complete the subject of the diagnosis of abdominal tumours, it is necessary now to con-

* See a case related by Prall, Schmidt's *Jahrb.* vol. cxvi. p. 65; also one by Dr. Hall Davis, *Obst. Trans.* vol. iv.

sider those cases in which there is a tumour in the abdomen not traceable into the pelvis.

It will not be necessary to enter at any length into the consideration of the diagnosis of tumours in the abdomen not traceable into the pelvis, inasmuch as the subject is one scarcely coming within the compass of the present work. There are, however, some tumours of the abdomen which may not be traceable into the pelvis, and yet have their origin in the generative organs, concerning which some mention is required.

Fibrous tumours of the uterus sometimes become pedunculated, and the pedicle elongated to such an extent that they enjoy great mobility and freedom of movement. It might be difficult to say of such a tumour very positively whether it belonged to the uterus or to the ovary.

The fibroid tumours of the uterus, when growing from its peritoneal surface, may become detached from the organ, and remain fixed at any part of the abdominal parietes. When so fixed and separated from the uterus, the diagnosis of the nature of such a tumour would be necessarily difficult. It appears that the ovary also may become separated from its attachment by twisting of or dragging on the Fallopian tube, and that it may similarly become attached to some other part of the abdominal wall. The occasional occurrence of separation of fibroid tumours or of the ovary, from their normal attachment, is a circumstance to which attention has been directed by Rokitansky* and Turner.†

A pedunculated fibroid tumour of the uterus might be confounded with *movable kidney*, the rounded shape and the firm feel of the tumour being observable in both cases. The diagnosis of a fibroid tumour, detached and transplanted as above pointed out, would not be easily made out.

Cases in which the *omentum* is the seat of a considerable deposition of *fat* occasionally create embarrassment as to their diagnosis. It might be difficult to ascertain whether the tumour perceivable was actually traceable into the pelvis or not, owing to the usually associated fatty condition of the abdominal parietes; such tumours are most liable to be confounded with pregnancy, as already pointed out.

An exceptional case here requiring mention is the presence of a tumour due to an *extra-uterine fœtation*, and so situated as to give the idea that it is not traceable into the pelvis.

* See Schmidt's *Jahrb.* vol. cx. p. 306.

† *Edin. Med. Journ.* Feb. 1861, p. 698.

A difficulty is more frequently experienced in determining whether the tumour proceeds from the pelvis or not, in cases where solid tumours of the uterus or ovary are associated with *ascites* to an extreme degree. This class of cases has already been alluded to, in speaking of the diagnosis of the causes of considerable enlargement of the abdomen with the fluctuation sign present.

Some cases of *fœcal tumour* may give rise to difficulty when the tumour is situated low down. The observations already made on the diagnosis of fæcal tumour here again apply.

Cancerous or cystic disease of the omentum, forming a tumour of considerable size, may closely simulate tumour originating in the pelvis. Ovariotomy has been attempted in some such cases. The surest means, perhaps, of avoiding similar errors of diagnosis in future is to indicate, as has now been done, the possibility of their being committed. If ascites were superadded in such a case, the difficulty would be greater. Attention to the mode of growth of the tumour would be most likely to give satisfactory information.

In all cases where doubt exists as to whether the tumour extends into the pelvis, the history of the case is of great consequence. It generally happens that tumours of ovarian and uterine origin do, at some period or other of their growth, give rise to what may be termed pelvic symptoms—difficulty in defæcation or micturition, pains in the lower limbs, &c. &c., and absence of such pelvic symptoms, therefore, would be against the theory of pelvic origin of the tumour, though on these grounds alone it would not be safe to come to a conclusion. We should, however, certainly hesitate to perform ovariotomy in a case where pelvic symptoms had been absent from first to last, unless there were very good grounds for believing the tumour to be ovarian.

CHAPTER VII.

DIAGNOSIS OF PREGNANCY.

Age at which Pregnancy occurs.
Quickening: Absence of Menstruation.
Enlargement of the Uterus as a Sign of Pregnancy.
(A). Diagnosis of Enlargement of the Uterus by Vaginal Examination—Difficulty of Diagnosis of Pregnancy in early Months—Ballottement—Mole Pregnancy—Hydatids—Missed Labour—Sanguineous Enlargements of Uterus—Certain other Rare Causes of Enlargement—Fibroid Tumour of Uterus—Polypus—Cancer of Fundus—Chronic Enlargement of Uterus.
(B). Enlargement of the Uterus—Abdominal Examination—Feel of the Tumour due to the Gravid Uterus—Size and Duration of the Tumour—State of the Skin covering the Abdomen and Condition of the Umbilicus—Auscultation of the Abdomen, Sounds of Fœtal Heart, Uterine Souffle, Funic Souffle, Sound produced by Fœtal Movements—Diagnosis of Pregnancy from other Forms of Abdominal Tumour.
Alterations in the colour of the Vagina in Pregnancy.
Condition of the Breasts—Alterations in Size and Texture—Changes visible to the Eye; in the Nipple, in the Areola—Other Changes.
Comparative Estimate of the value of different Signs of Pregnancy.

Age at which Pregnancy occurs.—Between the ages of 15 and 45—in this country, at least—fecundation occurs, and where child-bearing takes place before this period or subsequent to it, the case is to be regarded as exceptional. It is important, however, to be aware of the extreme limits within which the occurrence of pregnancy may be considered possible.

The *earliest* substantiated case in this country is probably that recorded by Mr. Roberton, in which pregnancy commenced in the 11th year; another is *said*, by another authority, to have occurred in the 9th year. In a case cited by Dr. Montgomery * as having been observed in the United States, pregnancy took place in the 10th year. Dr. Goodeve, of Calcutta, reports that the earliest age at which he had known a Hindu woman bear a child was 10 years: he had heard of one at 9. The experience of Dr. Montgomery himself did not furnish him with an instance

* *Signs and Symptoms of Pregnancy*, 2nd ed.

in which pregnancy commenced earlier than the 14th year. Dr. Wilson, of Glasgow, has recorded a case in which conception took place at the age of 12 years and 9 months.*

The *latest* age at which pregnancy has been recorded in this country is 54. The number of cases of pregnancy after the age of 45 is, however, small. Thus, of 10,000 cases observed at the Manchester and Salford Lying-in Hospital by Mr. Roberton, only fifty-one were over 45 years of age; the distribution of these being as follows:—

In the 46th year, 12 cases	In the 50th year, 9 cases
„ 47th „ 13 „	„ 52nd „ 9 „
„ 48th „ 8 „	„ 53rd „ 1 „
„ 49th „ 6 „	„ 54th „ 1† „

In a volume not long since issued by the Registrar-General of Scotland are contained certain facts relating to this question which came out in preparing the Glasgow table. Two women became mothers at the age of 51, four at the age of 52, and one mother was registered as having given birth to a child in the 57th year of her age.‡

In France, the possibility of pregnancy at the age of 58 was decided judicially in one case. In this country, in respect to an important case decided in the Court of Chancery, no evidence could be brought forward to the effect that pregnancy at the age of 60 was possible. Dr. Montgomery declares that no case of pregnancy has occurred, of the particulars of which he has reason to be satisfied, at an age later than the 54th year; but this able authority goes on to state that he 'by no means pretends to deny 'the possibility of such occurrences.' Recorded instances of late pregnancy it is right to mention. Thus Devergie quotes a case of pregnancy at 58. Casper states that Marsa, a physician in Venice, treated a woman aged 60 for dropsy, which proved to be pregnancy.§ Capuron cites a case of pregnancy at 65.

The cases in which it is especially necessary to be aware of the possibility of the existence of pregnancy are those in which a long term of married life has passed over without conception having taken place: the woman has arrived at 'a certain age,' and the mere fact of her having remained childless, either altogether or for some time previously, tends to put the practitioner off his

* *Ed. Med. Journ.* Oct. 1861.

† Roberton, *On Physiology and Diseases of Women*, &c. p. 183.

‡ *Times*, Feb. 12, 1862.

§ *Handbuch der gerichtlichen Medicin.* Biologisch. Th. Berlin, 1858, p. 101.

guard. In addition to this latter circumstance, the other signs of pregnancy have occasionally been found absent in these cases of pregnancy at an advanced period of life. In a remarkable case occurring in Dr. Montgomery's practice, the patient first became pregnant in the 25th year of her married life. In another, pregnancy took place 17 years after a former delivery. Van Swieten records a case of pregnancy after an interval of 20 years; and Dr. Merriman another in which the interval was of equal length. It appears that pregnancy may even occur after the catamenia have ceased, and where there is, for this reason, an additional motive for deciding against the possibility of pregnancy, as in a case of Dr. Merriman's, also quoted by Montgomery.

All these facts are sufficient to show that, within certain limits, neither the advanced age of the woman, nor this combined with the circumstance that she has arrived at this age unfruitful, or with the fact that she has remained unfruitful for a long series of years, is sufficient to exclude pregnancy from the consideration; and, in a doubtful case, other data must be sought for before the decision can be arrived at.

Procreative Age in the Man.—In the case of the man no such exact limit can be placed on the duration of sexual power. Müller remarks: 'The duration of the reproductive power in man 'cannot be so exactly defined. In general, it continues longer 'than in woman; and not unfrequently very old men manifest a 'remarkable degree of virile power.'* Cases are on record in which men who have attained to the ages of 81 and 83 have at this advanced period of life become fathers; and the oft-quoted instance of 'Old Parr' must not be forgotten, who, it is stated, did public penance for misbehaviour, of which he was 'capable,' when over 100 years old.† It is also worthy of remark, that a very considerable degree of debility or disease in the man is not incompatible with the existence and exercise of procreative power.

Absence of Menstruation.—This though a most important sign of pregnancy is far from being a positive one. This subject will be further discussed in the chapter on 'Amenorrhœa.'

Quickening.—It is well known that, at a certain period of pregnancy, the patient usually experiences a peculiar sensation in the abdomen in the region of the uterus, due, as is almost generally admitted, to the actual movements of the fœtus within

* *Physiology*, Baly's Trans. p. 1488. † *Op. cit.* p. 321.

the uterus, and that the sensation in question usually continues to be felt by the patient until delivery has taken place. Popularly, the time at which the sensation in question is first perceived is termed the period of *quickening*, it being believed, although this belief is of course unfounded, that the fœtus only then begins to have a separate and distinct life of its own. The presence or absence of quickening—that is to say, of the sensations supposed to be due to motions of the child—is considered by women in general as complete proof of the presence or absence of pregnancy; and cases are not at all uncommon in which, in the face of facts demonstrative of the impossibility of pregnancy being present, women continue to imagine that they are with child, led away by their reliance on this supposed infallible sign of pregnancy.

It will be well to consider, in the first place, the nature and character of the sensations conveyed to the mother, and produced by the pregnant condition of the uterus, and, in the next place, other conditions which may give rise to sensations capable of simulating these.

The sensation termed 'quickening' is experienced by a pregnant woman usually at the end of four calendar months from the date of conception (Hamilton); or 'between the end of the twelfth 'and sixteenth weeks after conception, or, adopting another mode 'of calculation, between the fourteenth and eighteenth weeks after 'the last menstruation' (Montgomery). It is sometimes felt at an earlier period than this, in very rare cases in the tenth week from conception; and in some cases it is not perceived until a considerably later period. So far respecting the time at which it occurs. The phenomena of quickening are described by Dr. Montgomery as follows:—'Under ordinary circumstances, when quickening 'does occur, but especially if it happens in conjunction with the 'sudden ascent of the uterus out of the pelvis, the woman is apt 'to feel an unusual degree of nervous agitation, which not un-'frequently ends in faintness, or even complete syncope, after 'which she is sensible of a slight fluttering sensation, which from 'day to day becomes more distinct, until she fully recognises the 'motions of the child.' *

There has always been some difference of opinion as to the cause of the sensation termed quickening. Thus it has been considered by some to be due to the ascent of the womb into the abdomen, by others to the first peristaltic contractions of the newly-organised uterine muscular fibres (Dr. Tyler Smith); and the seat of the

* *Op. cit.* p. 146, 2nd ed.

sensation has even been held to be in the abdominal parietes. The more general idea is that the sensation is due to the actual motions of the child.

This difference of opinion as to the cause and nature of quickening appears to depend on the fact that the phenomena witnessed in different cases, and termed 'quickening,' are in reality not always identical; and the term must be considered a composite one, meaning, in one case, the alteration in position of the uterus due to its increasing size; in another, the actual sensation of the child's movements; in a third, possible contraction of the uterine muscular fibres alone. This distinction has not been sufficiently insisted upon. It is very certain that by women in general the term quickening is not held to mean exclusively and always the sensation of the motion of the child: they often mean by the expression a particular attack of faintness, which may not be followed by the experiencing of actual sensation of motion of the child for some very considerable time afterwards.

Thus the word 'quickening,' taken in its popular sense, is one which serves to characterise phenomena not always identical.

After the period at which quickening is usually observed has passed by, the patient being pregnant, the motions of the child become more and more evident, and the sensations described by the mother are plainly and unmistakably due to the active motions of the fœtus in utero. Whatever doubts may exist as to the actual nature and seat of the first sensations experienced, there can be none as to their cause at a later period. The sensations attributable to the motion of the fœtus are now peculiar in regard to their suddenness, abruptness, and distinctness. At first the sensation experienced is that of 'a slight pat or throb, some-'times scarcely more than a flutter,' sometimes a tickling or tremulous motion, resembling that produced by a little bird when held in the hand (Montgomery); but later the motions give rise to sensations more distinct and intense.

The motions of the fœtus are not regular, and are not regularly produced by the operation of the same causes. All women do not experience these sensations equally. In some cases all sensation of the motion of the child has been absent from the beginning to the end of pregnancy, the mother never having perceived the slightest motion on the part of the child. In other cases the motions are violent, to such an extent that patients consult us in order to obtain relief from the annoyance and inconvenience they occasion; they sometimes, towards the end of pregnancy especially,

occur so uninterruptedly as to prevent the patient from sleeping; and there is usually some one position in taking which the patient is more particularly liable to be troubled with them.

Regarded as diagnostic of the presence of pregnancy, it cannot be too often repeated that the sensations described, and of the presence of which we are informed by the patient, have very little positive worth. The force of imagination is very great. Hardly a better instance could be afforded of the truth of this saying than is afforded so frequently by women who, imagining themselves to be pregnant, declare that they plainly perceive the motions of a child, and persist in their assertion until the lapse of time convinces them reluctantly of their error. And this mistake is not confined to women who have had but little experience in such matters. The observation of Hamilton should always be borne in mind, that 'no woman ever yet fancied herself pregnant 'without also persuading herself that she felt the motions of the 'child.'

In many cases where women are so deceived and deceive themselves, there is probably no actual mechanical cause for the sensation said to be experienced, but in other cases there are such present. Thus, in women with *abdominal tumours*, sensations of movement are sometimes present; in cases of ovarian tumour, an irregular pulsatile sensation is sometimes perceived, due, probably, to the pulsations of the aorta or of the great vessels lying behind and pressed upon by the tumours in question; in cases of menstrual retention within the uterus, they have been noticed. The motions felt under these circumstances are doubtless in many instances due to sudden movement of gaseous or other contents in the intestine, which phenomena would be more likely to be observed in cases where the intestines were pressed upon and thrust out of their proper place by tumours. Twitching of the abdominal muscles has also been described as an occasional cause of the peculiar sensations now alluded to. Where the uterus is distended by retention of menstrual fluid, by presence of the ovum in a condition of hydatidiform degeneration, or otherwise, and sensations like those due to motions of a child are present, the cause of the same is probably the contraction of the uterine muscular fibres. Dr. Montgomery relates three cases in which these anomalous sensations of motion were due to presence of 'hydatid pregnancy.' The sensation was different from that experienced in ordinary pregnancy, and was described as a peculiar crawling or sliding sensation.

Between cases in which the sensations experienced have their origin in real motions of a live fœtus and those in which these pseudo-motions or sensations of motion are present, there is usually so wide a difference that but little difficulty is experienced in distinguishing them. Thus, as regards their seat, the spurious motions are often described as present too high up to be due to pregnancy; as regards their character, they are different, as has been already shown. But the most important means of distinguishing between the two things lies in a careful examination of the accompanying symptoms, and their relation one to the other, especially in regard to the time of their appearance. Thus the pseudo-motions may be felt at a time too early for true pregnancy to have occasioned them, or, on the other hand, occurring for the first time late in a supposed pregnancy, the other conditions which should by that time have been noticed are entirely absent.

The diagnosis of the presence or of the absence of pregnancy, should never be made to rest on the presence or absence of the sensations now under consideration, or very serious errors may be made. The onus of deciding for or against pregnancy on this ground alone should never be accepted by the attendant: an examination of the abdomen and of the vagina, together with a careful comparison of the results of these examinations with the results afforded by the rational symptoms, can alone furnish us with the means of solving the problem. It does not follow, because a woman has 'quickened,' that she is with child; nor is it to be inferred, because there have been no quickening and no motion of the fœtus, that therefore the woman is certainly not pregnant.

ENLARGEMENT OF THE UTERUS AS A SIGN OF PREGNANCY.

The diagnosis of the various causes of enlargement of the uterus is very difficult. Not less difficult also, in many cases, is the actual diagnosis of the mere presence of enlargement of the uterus. In this place it is intended to consider the diagnosis of the various causes of enlargement of the uterus in connection with the diagnosis of pregnancy.

For this purpose it will be necessary to consider separately

a. The diagnosis by vaginal examination;
b. The diagnosis by abdominal examination.

A. VARIOUS CAUSES OF ENLARGEMENT OF THE UTERUS.—VAGINAL EXAMINATION.

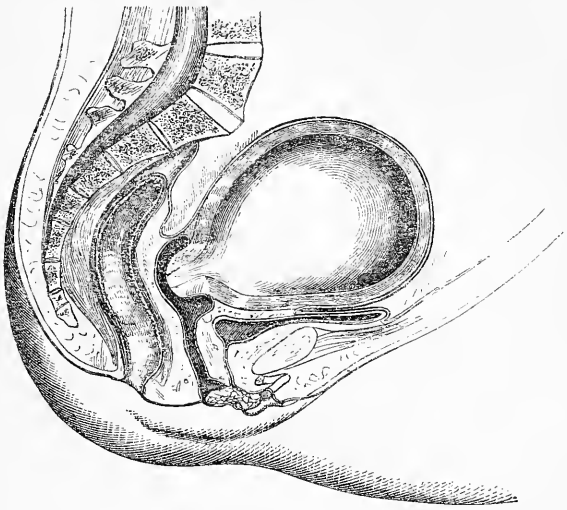
The recognition of the presence of enlargement of the uterus is of the utmost importance as a sign, and one of the most reliable, of the existence of pregnancy. We find that the difficulties which practically present themselves in connection with this subject are of two kinds. In some cases of pregnancy, it is not easy to establish the presence of a uterine tumour by a vaginal examination, when such undoubtedly exists; in others, a uterine tumour being present, the difficulty is to associate it with pregnancy.

In normal pregnancy, the increase in the size of the uterus is not at first considerable, nor easily appreciated. The organ remains in the pelvis for about the first three months, and it is only towards the end of that time that, by a digital examination from the vagina, this increase in size can be positively appreciated. It may be easy to follow the growth of the uterus in a given case, when examinations are made from time to time, and opportunity for comparison is thus afforded, but it is not easy to pronounce upon the actual state of matters on the results afforded by a single examination. The increase in the size of the uterus, such as is due to pregnancy at a later period, is however more obvious, and it is then possible, also, to correct the results of a vaginal examination by the information derived from an abdominal examination.

Evidence of the enlargement of the uterus due to pregnancy is to be sought in the space between the cervix uteri and the pubes, i.e., through the roof of the vagina. At the middle of pregnancy —during the fifth month—a rounded, smooth, tense, resistant tumour is here encountered by the finger, and this tumour shades off insensibly into the cervix uteri, there being no separation between them. It has been already remarked that there is sometimes a difficulty in recognising this tumour when it is present; Gooch expressed the opinion that 'the young practitioner finds 'more difficulty in satisfying himself about this symptom than 'about any other which is detected by touch;' and the statement is undoubtedly true. The difficulty sometimes arises, apparently, from the fact that the bladder, somewhat distended with urine, intervenes; at other times, from the tense elastic condition of the walls of the vagina and adjacent structures, interfering with the

recognition of the tumour. If the supposed pregnancy have gone so far as the fifth month, the difficulty is almost always capable of

Fig. 27.*



removal by placing the other hand above the pubes—by, in fact, employing conjointly the abdominal and the vaginal examination. Before the fourth month, however, the difficulty of detecting the enlargement is greater, and there is less possibility of correcting an error by having recourse to another method of examination.

During the early months of pregnancy the uterine tumour is harder, firmer, and more resistant than it is subsequently, and the enlargement is not so easily got at, so to speak, from the vagina, owing to the interposed, and at first not materially altered, vaginal portion of the cervix uteri.

From chronic enlargement of the uterus, early pregnancy is distinguished by the fact that in pregnancy the menses are (usually) absent, that the os is soft (see examination of os uteri, p. 58), whereas in chronic enlargement or hypertrophy of the uterus, the lips of the os are unchanged in this respect; further, by the progress of the case, in the one the enlargement remaining pretty much in statu quo, in the other the enlargement constantly progressing. To this statement exception is to be made in those

* Fig. 27 represents the position and relations of the uterus at the fifth to the sixth month.

rare cases when the fœtus dies and remains in the uterus for some considerable time afterwards. The diagnosis of enlargement of the uterus due to fibroid tumour or polypus uteri from early pregnancy, rests on nearly the same grounds; moreover, these fibrous growths generally give rise to hæmorrhage, or to more or less profuse menstruation. But a case may come before us in which it is a question whether a particular hæmorrhage be due to abortion, to fibrous tumour, or to polypus of the uterus, and the examination is to be the means of deciding the point. The state of the uterus may be identical in the three supposed cases—it is enlarged and fuller than usual. The difference which exists is in the state of the os uteri: in abortion it is large, soft, and open, whereas in fibroid tumour occasioning hæmorrhage, the aperture is smaller, and the os is not soft as is the case in pregnancy. In cases of threatened abortion the os may, however, be found small. In polypus uteri the os may be open as in abortion, but the softness of pregnancy is not present. All these statements must be received subject to certain qualifications, elsewhere mentioned, in reference to the condition of the os during the early months of pregnancy. Cancer confined to the body of the uterus alone, which is a rare disease, could not well be mistaken for early pregnancy; the discharge, hæmorrhages, pain, &c., would put pregnancy out of the question.

The possibility of one of the conditions alluded to coexisting *with* early pregnancy must not be forgotten. In such cases much more difficulty would be encountered in making a complete diagnosis.

In cases of extra-uterine pregnancy, the uterus is enlarged and undergoes the same kind of changes, though not to the same degree, as in normal pregnancy.

After the fourth month of pregnancy the enlarged uterus is to be felt more distinctly between the cervix and the os pubis. The tumour which it here forms is tolerably firm, unless under exceptional circumstances, and it is reached with a variable degree of ease. It gives an obscure sense of fluctuation, and *ballottement* is perceivable. This, as one of the most reliable of the signs of pregnancy, requires particular attention in this place. The position of the patient which is most favourable for the purpose of ascertaining the existence of ballottement, is the erect posture. The rectum and bladder having been thoroughly evacuated, the finger is pressed upwards, resolutely but slowly, against the uterine tumour, and it is then very suddenly made to retreat for the space

of half an inch or so, and there retained. The following instant the point of the finger is conscious of a slight tap, and this is produced by the fœtus, at first pushed upwards, falling suddenly by the force of gravity on the lower part of the uterine cavity, at the point with which the finger is in contact. The sensation communicated is very peculiar and characteristic.

There is another kind of ballottement which is performed through the abdominal walls, and which will be described further on.

In forming a conclusion from the presence of ballottement, we must bear in mind, that in very rare instances, by depending too exclusively upon it, we may be led into error. Thus cases are related by Depaul and Cazeaux in which the fundus of the uterus, enlarged and tilted forwards, was felt through the walls of the bladder, and communicated a sensation like that of a fœtus within the uterus. The presence of a stone in the bladder might equally give rise to the sensation.

On the other hand, we cannot affirm in cases where ballottement is not perceptible, that the patient is not pregnant. 'This diffi-'culty may arise in some cases, from the fœtus being unusually 'small, or from the cervix being unusually long; and in some 'instances I have been satisfied it arose from the uterus lying too 'much beyond the reach of the finger at the time of examination, 'the success of which may also be defeated by the presence of the 'placenta low in the cervix, or over the os uteri, and of course in-'terposed between the finger and the child, which we are thus pre-'vented from feeling.' (Montgomery.*)

It may not be possible in all cases to obtain the evidence which ballottement affords, even when pregnancy exists, and when it is sought at the most appropriate period: a want of dexterity on the part of the observer may, of course, render the test useless. There are some circumstances which render ballottement impossible, or at least more difficult to obtain than usual. One of these—the implantation of the placenta at the cervix uteri or over the adjacent anterior part of the uterus—has been mentioned. Another is, absence, more or less complete, of fluid in the amnionic bag, for the presence of fluid is essential to the development of the sign in question: another circumstance is mal-position of the fœtus. Ballottement enables us to distinguish pregnancy from that distension of the uterus which is present in cases of hydatidiform degeneration of the ovum; also from collections of serous or of

* *Op. cit.* p. 200.

sanguineous fluid in the uterus. In either of the cases in question the uterus may be enlarged and distended so as to simulate pregnancy, the vaginal portion of the cervix may be reduced in length as in advanced pregnancy, the menses absent, and the increase in the size of the abdomen may also favour the same idea. The existence of pregnancy, indicated by ballottement, would of necessity be corroborated by the presence of other local and general signs of this condition. The softness of the os, the shortening of the vaginal portion of the cervix, the more posterior position of the cervix, the presence of an abdominal tumour, changes in the breasts, &c. &c. Respecting the period of pregnancy at which ballottement is perceivable, there is a variation. It is best perceived between the fifth and seventh months: as Gooch remarks, 'earlier the fœtus is too light to be felt, and later 'it is often too closely packed.' It is, however, from the fifth to the seventh months that this sign of pregnancy is most useful; at a later period, other signs are available. It may, in favourable cases, be felt as early as the fourth month.

The diagnosis of pregnancy thus far advanced, from fibrous tumours or fibrous polypi enlarging the uterus, rests on the greater hardness and firmness of the tumour in the latter, the absence of softness at the os uteri, the slow growth and long-continued presence of the tumour, the presence of hæmorrhages or still-continuing menstruation. In cases of large polypus of the uterus distending the cavity, there are especially remarked the occurrence of hæmorrhages, copious discharge, and general and local disturbance. In most cases the os would be open to a certain degree, and although it might be somewhat soft, the hard tumour projecting from within would be at once recognised as a polypus. The os is not, however, always open in this manner in cases of polypus.

Although fibrous tumours of the uterus, equally with polypus growing within the cavity, usually prevent the occurrence of pregnancy, or at least cut it short at an early period, the co-existence of pregnancy with either of these conditions is now and then observed: these complicated cases present, as might be expected, peculiar symptoms, and require careful examination and attention for their recognition.

Mole Pregnancy.—The most important of the conditions comprehended under the above title is that known as the hydatidiform mole. The symptoms are at first those of pregnancy, but no movements of the fœtus are felt at the proper time for their

appearance; the breasts do not pass through the regular series of changes, and yet the uterus continues to enlarge. The enlargement progresses more, often very much more, quickly than is the case in normal pregnancy. On examining from the vagina the uterus is found enlarged as in pregnancy, and the alterations met with in the vaginal portion may be pretty nearly identical with those peculiar to this condition, but the uterus is harder than is the case in normal pregnancy. It is, as before remarked, larger than it should be, considering the time the catamenia have disappeared. If the condition in question have existed for some months, we are generally informed that hæmorrhages have been occasionally observed, that there has been an occasional discharge of a watery fluid from the vagina. It is not possible to detect ballottement as in regular pregnancy. The os uteri may or may not be open sufficiently to allow the observer to detect the presence of some of the hydatidiform cysts in the cavity. The physical condition of the uterus, however, as ascertained by vaginal examination, may be such that it is impossible to distinguish it from normal pregnancy; even the fact that ballottement is absent does not positively assure us that there is not a living fœtus within the uterus, as already remarked; and the diagnosis must then be guided by the result of abdominal examination, by a consideration of the rational symptoms, and by the history of the case. (See 'Examination of Abdomen.')

The hydatidiform or vesicular mole is not the only one which may be present, but it is the only one which is associated with considerable enlargement of the uterus.

True hydatids of the uterus are extremely rare. Rokitansky met with one case. I have met with one also since the 2nd edition of this work was published;* but I believe these are the only authenticated cases on record.

Missed Labour.—Under this term have been classed certain very rare and extraordinary cases in which, pregnancy having advanced nearly to its completion, the fœtus has perished, and has been retained in the uterus for a variable time. In such a case the symptoms would be necessarily very unusual and peculiar; first, apparently, normal pregnancy, absence of delivery; then, cessation of all signs of pregnancy, the abdominal and uterine enlargement still continuing.

Enlargement due to Sanguineous Distension of Uterus (*Hæmatometra*).—Cases in which the uterus is largely distended

* *Obstet. Trans.*, vol. xii. p. 237.

with blood come before us very rarely. In most of the cases of this kind, the distension is due to retention of the menstrual fluid, which is unable to escape owing to some abnormal condition of the canal of outlet. Where menstruation has never occurred, this retention is mostly due to imperforate condition of the hymen. More rarely, the canal of the vagina being found patent, the retention is due to congenital closure of the os uteri, also in patients who have never menstruated. The patient would in this case present the following combination of symptoms:—Vaginal canal patent, os uteri closed, uterus enlarged, menstruation never present. In patients who have formerly menstruated, retention of menstrual fluid, and consequent enlargement of the uterus, may be due to one of the following causes:—*occlusion of the os uteri*, in consequence of the *use of caustics*, or in consequence of *adhesion following on parturition*; diseases of the uterus, e. g. *polypus uteri, hypertrophy of the cervix uteri, cancer* of the inferior part of the uterus, possibly also pressure of *tumours external to the uterus*. These have in rare cases led to retention of menstrual fluid by blocking up the outlet.

A sign common to the conditions just described is absence of the catamenia—and care will be consequently necessary to distinguish such cases from pregnancy.

The diagnosis of that form of enlargement of the uterus due to menstrual retention from other conditions capable of giving rise to enlargement of this organ, turns partly on the history of the case, partly on the results of examination. The remarkable symptoms produced by retention of the catamenial fluid have been elsewhere described. With reference to the physical characters of the tumour in the cases now before us, it is elastic, rounded, giving evidence of fluctuation, and, if large, this fluctuation can be made evident by simultaneous abdominal and vaginal examination.

Cases of Hydrometra are rare. The physical signs of enlargement of the uterus from this cause resemble closely those present in menstrual retention; the tumour is elastic, tense and spherical. But the history is very different. The hydrometra is usually present in women beyond the climacteric age; the enlargement is of slow growth, giving rise to few symptoms. There are, however, occasional severe labour-like pains, which are due to contractions of the uterus. It would be hardly possible to confound this condition with pregnancy.

Purulent Collections in the Uterus.—The uterus may be dis-

tended with pus or with a puriform secretion, which may be considerable in amount. These purulent collections are by no means common. The puerperal state furnishes the majority of the cases coming under this category.

Physometra.—Here the uterus is enlarged from the presence of gas within its cavity. This disease is very rare, but the enlargement due to it may be very considerable. In hydrometra, as in physometra, the uterine orifice is generally closed, partially or completely. The circumstances under which this tendency to the formation of gas in the uterine cavity exists will be referred to under the head 'Examination of the Abdomen;' where also the diagnosis will be pointed out.

Tubercle of the uterus is a very rare disease. The enlargement may be considerable. Attacking the mucous membrane in the first place, the cavity of the uterus may at a later period become 'filled by a purulent pulpy fluid' (Farre), and thus the uterus becomes enlarged in another way.

In cases of enlargement of the uterus due to any of the causes considered up to the present point, the tumour is to the touch more or less soft or elastic, or conveying an impression that there is fluid within. The next class of cases are those in which the enlarged uterus is hard and firm and resistant. The conditions which may under such circumstances be present, and between which we have to distinguish, are the following:—

Fibrous tumour of the uterus.

Fibrous polypus within the uterus.

Cancer of the body of the uterus.

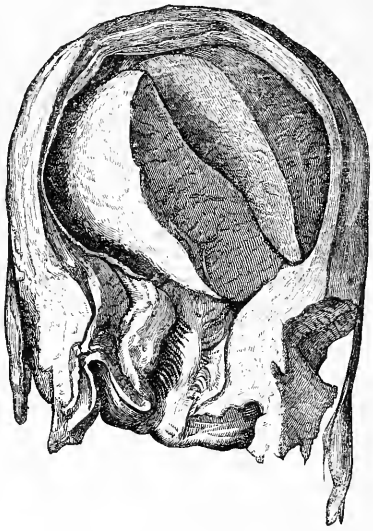
Chronic enlargement or hypertrophy of the uterus.

These different conditions are, with the exception of cancer of the uterus, all more or less chronic in character. Each of them may be attended with more or less profuse losses of blood, especially the three former. The prominent characteristic and diagnostic symptoms of each will now be described.

Fibrous Tumours and Fibrous Polypi of the Uterus.—Whether the tumour be in the wall of the uterus or in its cavity (see fig. 28), the uterus is equally hard and resistant externally. In the case of a polypus, the position of the uterus is more symmetrical, whereas a large fibrous tumour growing in the walls gives rise to distortion of the organ. The os uteri may be alike in the two cases—it may be open or closed: in the case of polypus, however, it is more generally open, so as to admit the point of the finger, and frequently a portion of the surface of the

polypus can be felt within the os, even if it be not found projecting into the vaginal canal. In some cases it is impossible to ascertain whether the case be one of fibrous tumour or fibrous polypus, until after dilating the os uteri artificially as first practised by Sir J. Y. Simpson. The hæmorrhages and discharges

Fig. 28.*



are generally profuse in cases of polypus, more than in the case of fibrous tumours. When the enlargement due to polypus or fibroid of the uterus is not very considerable, the diagnosis of the case from simple chronic hypertrophy of the uterus, or from cancer of the uterine fundus may be, the physical signs alone being considered, by no means easy ; but the symptoms observed in these different cases are not identical. In fibroid tumour and in chronic hypertrophy, the case is one of slow progress—the symptoms are not necessarily so important; but in polypus and in cancer of the uterus there are generally leucorrhœa, profuse menstruation, hæmorrhages, &c. Further observations on enlargement of the uterus from these causes will be found in the chapters on abdominal tumours.

Cancer of the Fundus Uteri.—The diagnosis of cancer in this

Fig. 28, showing an intra-uterine fibrous polypus, is drawn from a preparation in the museum of University College.

position, from polypus, chiefly turns on the rate of progress of the case, unless recourse be had to artificial dilatation of the os for the purpose of exploring the interior of the uterus, and thus obtaining further information. The more ordinary cases of cancer of the uterus, where the affection is seated in the cervix, will be described in the chapter on Cancer. The body of the uterus may become affected secondarily, and so enlarged, but the condition of the os uteri in such cases offers decisive diagnostic data.

Chronic Enlargement or Hypertrophy of the Uterus.—An enlargement of the uterus due to this cause is limited in degree; pure and simple hypertrophy never gives rise to considerable enlargement. Hypertrophy of the uterus is an affection which is of a peculiar character; the uterus is thickened, increased in size, increased in vascularity; and it gives rise often to great discomfort from the pain, dragging sensations, feeling of weight, and from the effects of the mechanical pressure on the neighbouring organs. It is usually associated with enlargement and hypertrophy of the vaginal portion of the cervix uteri; and, indeed, the condition of the cervix is the one which more usually attracts attention to the exclusion of the other morbid condition, viz. the enlargement and hypertrophy of the fundus or body of the uterus.

B. ENLARGEMENT OF THE UTERUS.—ABDOMINAL EXAMINATION.

The Feel of the Tumour due to the Gravid Uterus.—It is during and after the fourth month that we can feel the gravid uterus above the pubes. Up to the fifth month the tumour so felt is tolerably firm, not sensitive, giving the impression of a rounded, smooth, fleshy mass. After this period the tumour is usually felt to be softer, this being due to the presence of fluid within it, and the degree of softness will vary with the amount of the fluid. There is often an obscure fluctuation perceivable. Soon after the fifth month harder masses or nodulations may be felt within the tumour, which gradually become more pronounced as it grows, these being the limbs or other parts of the body of the fœtus which may come into contact with the uterine wall. If, as occasionally happens, the amount of liquor amnii is very small, the uterine tumour is felt to be everywhere hard and more resistant, but the elevations and depressions corresponding to the irregularities presented by the fœtal surface are still to be detected. Usually, it is necessary to press inwards with the point of the

finger to detect the elevations in question, but now and then both the abdominal and the uterine walls are so lax that the members or other parts of the fœtus are more easily felt on application of the hand.

In cases where the uterine tumour is not to be felt above the pubes, from presence of fat, from resistance, or other causes, there is a peculiar hardness and fulness of the region in question. The importance of engaging the patient in conversation while endeavouring to ascertain the physical characters of the tumour should be now kept in view. It will be found exceedingly useful also to make the patient inspire and expire very deeply several times in succession, while the hand rapidly follows the movement of the abdominal walls. Often, in this way, a tumour becomes recognisable, the existence of which would be otherwise problematical.

As regards the surface of the tumour due to the gravid uterus, it is usually perfectly smooth and uniform (unless when so lax that the projecting angles or parts of the fœtus within cause irregularities); but cases may occur in which there are fibroid tumours growing externally to it, giving a nodular character to the surface. It would be important not to overlook such a possible coexistence of fibrous tumours of the uterus with pregnancy. In cases of hydatidiform pregnancy, the surface of the uterus is remarkably hard and resistant, but the hardness and resistance are uniform.

The discovery of the limbs or other parts of the fœtus through the abdominal walls is not usually available as a diagnostic sign of pregnancy until a late period, when other equally significant data are also obtainable. But there are other signs of pregnancy obtainable at an early period, by simply feeling the tumour, which are of great importance—viz. the *feeling of the movements of the fœtus within the uterus*. During the fifth month frequently, but after that time in the majority of cases, if the hand of the observer be laid smoothly over the abdomen and the suspected tumour, and gently pressed against it, a sharp, slight, but decisive tap is felt, due to the movement of the fœtus within. This is felt with more or less ease in different cases. The woman may be undoubtedly pregnant, and with a live child, this sign being yet undiscoverable; but if a little patience be exercised, by manipulation and pressure the slight impulse will be perceived. It is often felt immediately on applying the hand, and is only felt again on removing and reapplying it. It is capable

of being simulated by that sudden and spasmodic contraction of the recti muscles occasionally liable to be set up by the application of the hand in hysterical subjects; possibly also by the peristaltic movements of the intestines. The celebrated Joanna Southcott appears to have deceived her medical attendants by thus contracting the recti muscles. They believed that she really was pregnant. It has been recommended that the hand should be dipped in cold water in order more easily to excite fœtal movements, but this is unnecessary. The following remarks of Dr. Tanner are very much to the purpose: 'I would especially mention that the cold diminishes the acuteness of the sense of touch, while it is very likely to induce spasmodic contractions of the recti muscles, which are almost certain to be mistaken for fœtal movements.' *

There is still another sign of pregnancy derivable from palpation of the tumour through the abdominal walls, viz. hypogastric repercussion or ballottement. The patient is to be placed on the side, or, as Dr. Montgomery recommends, on the knees, 'with the shoulders depressed, so that the fœtus may be caused to gravitate towards the fundus uteri, which is also brought into more complete contact with the abdominal parietes.' The fingers are then to be pressed against the most dependent part of the tumour firmly but gently, and then very suddenly this pressure is to be withdrawn. In the act of withdrawing the pressure the fœtus is felt to fall against the retiring finger, and this constitutes the sign in question. It is identical with the internal ballottement previously described. (See p. 152.) Without placing the patient in this position, this external ballottement is often practicable when the pregnancy is far advanced; that is to say, the patient lying on the back, pressure is steadily made by one hand on one side of the uterus, and manipulation by the other hand is performed on the opposite side of the uterus as above directed.

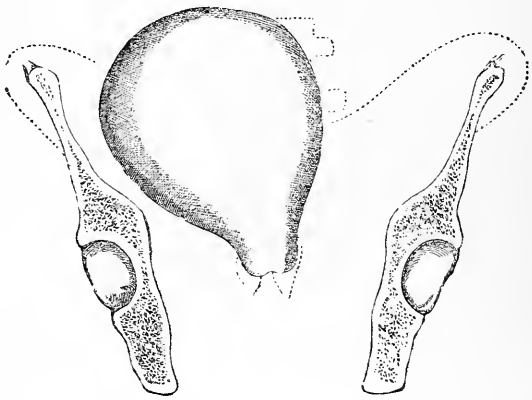
The value of this ballottement as a sign of pregnancy is great, but it is possible that an inexperienced observer might be led into error by it. Thus if the abdomen contained a solid pedunculated movable tumour, together with ascitic effusion, the sensation described above might be communicated. The internal ballottement from the vagina is not so liable to be simulated, and indeed if the previous instructions have been duly attended to, it is not possible to mistake the external ballottement due to a fœtus within the uterus for anything else.

* *Signs and Diseases of Pregnancy*, p. 76.

The Size and Position of the Tumour constituted by the Gravid Uterus.—Under ordinary circumstances the gravid uterus is, at the end of the third or beginning of the fourth month, so large that the fundus of the uterus can be perceived above the brim of the pelvis, and during the succeeding months, unless interfered with by some abnormal occurrence, the uterus rises progressively higher and higher. In the sixth month the upper border of the uterine tumour is as high as the umbilicus. In the seventh month it reaches two inches or more above this point, and at the end of the eighth month it reaches the ensiform cartilage. After this time, that is to say during the ninth month, although the uterine tumour increases in size, this increase does not show itself so much in the upward direction as laterally and anteriorly; and during the last week or two there is, more often than not, an actual sinking of the tumour to a slight extent. [Fig. 29 shows a not uncommon position of the gravid uterus at the sixth month.]

Then as regards the *position* of the tumour, it must not be supposed that the gravid uterus rises up in the median line and

Fig. 29.



maintains this position throughout the whole period of pregnancy. This is a very common error, and one which has frequently led to misconception and even worse. The fact is that the uterus does at first, and during the first two or three months, occupy a median position—until it becomes bulky and rises into the abdomen. But once in the abdomen it generally occupies for the next two months—that is to say, speaking broadly, during the fifth, sixth, and part of the seventh months—a lateral position, being most fre-

quently found on the right side of the abdomen. The degree of the lateral displacement varies in different cases, it being greater in some cases than in others, and when the abdomen is large, the intestines tympanitic, and the uterine tumour small in proportion to the period of the pregnancy, the tumour may be, and has been, overlooked, owing to the observer not being aware of this normal lateral deviation. See fig. 29.

We may now consider for a moment the indications to be drawn from the size and position of the tumour in the abdomen, as to the existence or absence of pregnancy in the case before us. The most important circumstance to bear in mind in deciding for or against pregnancy—size and position of the tumour alone considered—is the *relation which we find to subsist between the size and the duration of the tumour*. Thus we examine the abdomen on a particular day, and find a tumour extending to half way between the pubes and umbilicus; and examining the same case two months later, we find the upper border a little way above the umbilicus. If other signs of pregnancy be present, or rather if they be not absent, such an amount of growth in such a space of time in itself favours the presumption that the case is one of pregnancy. This evidence, therefore, has its value. Again, supposing we have a case before us which on other grounds—such as absence of menstruation for five months, &c. &c.—we conclude *may* be one of pregnancy, and on examination we find that there is absolutely no tumour to be detected above the pubes, this would be exceedingly important in a diagnostic point of view, because, if the patient were five months pregnant, there should be a tumour discoverable in the hypogastric region. To put another case, supposing we find menstruation absent for six or seven months, and a tumour reaching to the umbilicus is detected, while no increase in the size of the tumour is found to have occurred on examination of the tumour two months later, this would be presumptive evidence against pregnancy.

Considered alone, then, the size and duration of the tumour have significance. Taken alone, no absolute conclusion as to the presence of pregnancy can be drawn therefrom, but we can frequently pronounce very positively, from the result of our examination, that there is no pregnancy. And in point of fact, the larger number of cases that come before us are cases in which the determination of this single point is quite sufficient. Thus a woman is suspected to be pregnant, and it is known that if she be pregnant the pregnancy must have advanced, say six months.

We examine and find absolutely no tumour in the abdomen, which is possibly fat and tympanitic. Positively, and without going a step further, we can say, with this fact before us, that pregnancy is impossible—pregnancy of the duration supposed, at all events.

To return from this digression: we derive important indications from the size of the tumour as to what further procedures it is necessary or advisable to take to ascertain the nature of a case in which pregnancy is suspected. If we find no tumour above the pubes, to examine the patient *per vaginam* will give us no *certain* information whether the patient be or be not pregnant, in the majority of cases at all events; but if we find a tumour reaching to the umbilicus, a vaginal examination should give exceedingly important indications for the diagnosis, and would therefore be had recourse to.

A very interesting account might be here given of the many cases in which practitioners—some of them men of high standing and reputation—have been led to form erroneous conclusions respecting the existence of pregnancy. In many of such cases the mistake has been committed owing to the patient's statements having been attended to, and either no examination, or a very superficial one, instituted. The account given by the patient and the symptoms observed not unfrequently very closely resemble those present in pregnancy; so much so indeed, that by many writers the condition has received a special name, 'spurious pregnancy,' 'pseudocyesis' (Good); and the symptoms present under these circumstances may be such that they deceive even patients who have had considerable experience in child-bearing. Accounts of such cases will be found in most modern text-books —Montgomery, Tanner, &c. The latter author thus describes a typical case: 'We shall find the following succession of phenomena occurring possibly in a woman about forty-five years of age, the mother of a family, but who has not been pregnant for some six or seven years:—the catamenia have either ceased or become irregular, or the flow comes on at the proper period, but is very scanty; the abdomen began to swell from the pubic region, in the same gradual manner as in pregnancy, but the enlargement is seen to be more diffused when the patient lies on her back than it is in true pregnancy, and there is an appearance of unusual constriction around the lower ribs or over the diaphragm; the breasts have become painful and enlarged, blue veins are seen traversing their surface, the areola is darkened,

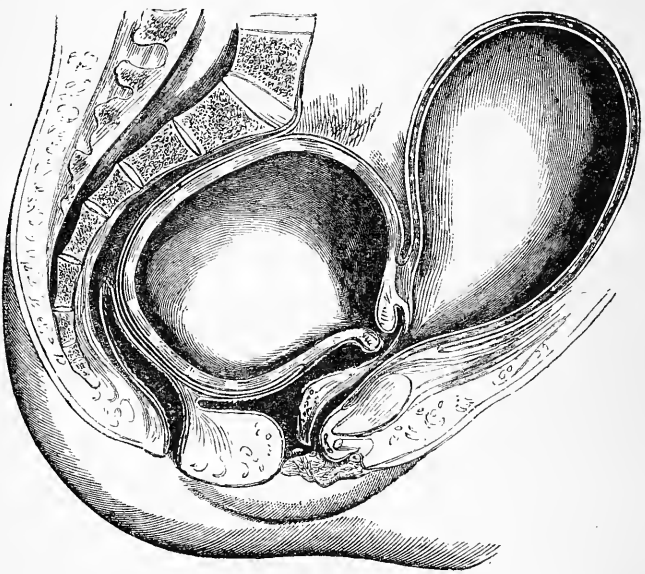
'and a serous fluid resembling milk is secreted, and escapes 'on pressure from the orifices of the milk ducts; the digestive 'organs are disordered, there is a capricious appetite, a frequent 'sense of nausea, with morning sickness, salivation and diarrhœa 'alternating with constipation; there is muscular debility, an ex- 'citable condition of the nervous system, cramp and retraction of 'the leg, with a change in the hue of the skin; the veins of the 'lower extremities have become varicose, and the patient is sen- 'sible of movements in the abdomen, which she asserts can only 'be those of a live fœtus, though if closely questioned she will 'allow that they are not altogether identical in character with 'such as she has felt on occasions when really pregnant. As these 'movements are at least partially due to the passage of flatus 'from one portion of the intestine to another, they are ap- 'preciable by a second party, who therefore confirms the patient 'in her erroneous views.' * It is hardly conceivable how closely in fact the symptoms may resemble those of pregnancy, and the only safe rule to be followed is never to consider the diagnosis as actually established, unless some physical sign on which we can place reliance as a sign of pregnancy be detected. What these reliable signs are will be pointed out in their due order. The foregoing observations apply to ordinary cases. Here, however, must be mentioned a few of the more important exceptional cases, in which deductions, drawn as directed, might prove fallacious.

Thus, a woman ceases to menstruate, there is no menstruation for a period of three months; at the end of the three months she becomes pregnant, and three months later she informs her medical attendant that she is certainly six months pregnant. An examination is made, but no tumour is detected above the pubes, and the erroneous opinion is given that the patient is deceived, and that she cannot be pregnant. Cases of this kind are not very uncommon. Another instance is that in which a woman becomes pregnant, the fœtus dies (at the age, for instance, of three months), but is not expelled. The woman does not increase in size, and for this reason the case may be supposed not to have been a case of pregnancy at all. This case is not a common one, however. Another is that in which the uterus having become impregnated grows with inordinate rapidity, and we find the uterine tumour very much larger than can be accounted for on the patient's statement of the history of her case. Such is sometimes the case in *hydatidiform* pregnancy, of which the fol-

* *Op. cit.* p. 127.

lowing is an instructive instance: The patient, aged 28, had been married three months, was last unwell the week previous to her marriage. Three weeks before I saw her, she experienced a slight strain in getting over a stile, and dating from that period there had been a slight 'show.' For a fortnight she had been treated as for an impending miscarriage. The day before I saw her, a severe flooding occurred, soon after which I was requested to visit her. On seeing the patient, I was struck with the great size of the abdomen; a tumour, evidently the uterus, extended to two inches above the umbilicus. The first impression produced on my mind was that the pregnancy must have advanced farther than the time stated—three months. On passing the finger, and subsequently the hand, into the os uteri, the organ was found distended with a mass sufficient to half fill a wash-hand basin, and composed of an ovum which had undergone the hydatidiform degeneration.* The facts of this case bear out the observations

Fig. 30.



of Montgomery and other writers, that in this peculiar affection, an unusually rapid increase in the size of the uterus may be observed, a rate of increase not observed in normal pregnancy. Dr. Moorhead has recorded a case in many respects resembling the above.†

* The case is more fully reported in the *Lancet*, vol. ii. p. 369, 1862.

† *Lancet*, vol. i. Feb. 21, 1863.

In cases of retroversion of the gravid uterus (see fig. 30) there is a fallacy liable to rise in reference to the diagnosis, although other circumstances usually lead to the detection of the real nature of the case. The tumour which should be present above the pubes is then absent, but it is usually replaced by another—the distended bladder. And it is just possible that the observer, finding a tumour above the pubes answering in position, in size, and in shape, to the tumour expected to be found there, might make an important error in diagnosis. The urinary difficulties, the extreme pain and tension in the pelvis, and the other symptoms usually present, generally, however, attract attention, and point out that there is something about the case very unusual at all events. A vaginal examination would at once enable us to explain the nature of the condition present.

Lastly must be considered those cases in which extra-uterine pregnancy is present. These cases are not very common, but the symptoms observed under such circumstances are generally such as to occasion more or less obscurity in the diagnosis. The more common case is that commonly known as Fallopian pregnancy, the fœtus being enclosed in one of the Fallopian tubes. The less common case is that in which the fœtus is developed in the abdominal cavity. The tumour presented to the touch in such cases may be situated in the middle line, but more usually it is to one side. Speaking generally, there is little in the tumour itself which is characteristic or which would enable us to distinguish between these cases and cases of normal pregnancy, unless the nature of the case were suspected, and special care taken. The accompanying symptoms are, however, usually peculiar and to these we must look for aid in the diagnosis. It more frequently happens that one of the terminations of this abnormal pregnancy has arrived before the diagnosis has been made out. The terminations are various. Thus the fœtus may grow to its full development, then die and remain in the abdomen, or it may burst from the cavity in which it is enclosed (whether the Fallopian tube or a cyst) into the abdomen, before arriving at full development, occasioning in the latter case often frightful hæmorrhage into the abdomen and sudden death to the mother. Or the death of the mother not ensuing, the fœtus becomes encysted, and remains enclosed in the abdominal cavity. When the fœtus is in the abdominal cavity, this being its primary or its secondary location, it may there remain for many years, giving rise to no particular inconvenience; or, after a variable time, a process of

suppuration may be set up, in the course of which the remains of the fœtus are expelled, through a fistulous opening in the abdominal walls, into the intestinal canal, or into the bladder.

A woman, the subject of extra-uterine pregnancy, may present no symptoms of an unusual character up to a considerably advanced period of gestation. Such may, however, set in at a much earlier period, and this depends, partly at all events, on the location of the fœtus. The symptom which in some cases first attracts attention is the fact that the patient, though supposed to be pregnant, has what she considers to be a catamenial discharge. This point has been already alluded to (p. 97). Discharges occurring in a pregnant woman should lead us to investigate the case more particularly. One of the most frequently observed symptoms of extra-uterine pregnancy is presence of pains of a dragging, sharp character in the pelvic region, the abdomen being often also tender to the touch. Yet there is nothing very significant in such symptoms, for patients who are the subjects of normal pregnancy not uncommonly present symptoms such as those which have been described. And if the patient be examined *per vaginam*, we usually find the os uteri presenting characters such as are present in normal pregnancy. The use of the sound would of course inform us whether the uterine cavity were empty or not; but there is this difficulty in the use of the sound in the diagnosis, that it is only safe to use it when we are absolutely sure that the uterus does not contain an ovum. Practically, the sound is of little service in the diagnosis.

State of the Skin covering the Abdomen, and Condition of the Umbilicus.—Under certain circumstances, various peculiarities in the condition of the skin covering the abdomen, and of the umbilicus, have diagnostic significance and value.

The most important peculiarity in question is a change observed in the greater number of cases of pregnancy. There is found 'a 'coloured line of about a quarter of an inch in breadth, extending 'generally from the pubes to the umbilicus, but not unfrequently 'thence to near the ensiform cartilage; its hue is some shade of 'brown, but sometimes partaking of the yellowish tint of ochre, 'and sometimes amounting to a full-bodied dark amber.' (Montgomery.) Around the umbilicus, too, a dark-coloured disc is often found, which Dr. Montgomery terms the 'umbilical areola.' The two may, and often do, exist together, but the umbilical areola is considered by Dr. Montgomery as of higher value as a positive indication of pregnancy than the dark abdominal line. These

changes in the skin above and round the umbilicus are not found in all cases of pregnancy; they are not found equally developed in different individuals at the same period of pregnancy; they are most marked in dark women; they are less to be depended upon as diagnostic of a second than of a first pregnancy.

As suggestive of the idea of pregnancy, the presence of these discolorations must be regarded as very important. If, for instance, we have to examine the abdomen of a patient, and find it enlarged and presenting the discoloration such as described above, this of itself would suggest to us the view that the enlargement was due to pregnancy. The observer must be cautioned, however, that until he has actually acquainted himself with the nature of the discoloration due to pregnancy, by inspection of some few undoubted cases, he will not be in a position to make use of this means of diagnosis.

Lastly, the sign in question has a certain amount of value in medico-legal cases, where there is a doubt as to whether the woman has been recently delivered of a child or not. In a woman suspected of having given birth to a child three or four days previously, the presence of a well-marked abdominal line and umbilical areola would be very strongly confirmatory of the suspicion. Its absence would not equally prove the negative, however, especially in the case of a woman with light hair.

Auscultation of the Abdomen.—In the employment of auscultation we have a means of diagnosis, in cases of suspected pregnancy, of the greatest possible value and importance. Every student of medicine should diligently prepare himself for making use of this means of diagnosis by practising it on all occasions.

It is now necessary to give an account of the sounds heard on auscultation of the abdomen—1. under ordinary circumstances; 2. when pregnancy is present; to indicate the value of the latter as diagnostic of pregnancy; and to point out how, and what, fallacies are likely to be encountered.

A few words first, however, in reference to the method to be pursued in thus investigating the condition of the abdomen. For very obvious reasons the stethoscope should be preferred to the application of the ear directly to the abdominal parietes. Some care is necessary in adjusting the stethoscope so as to be able to listen easily and with success. The abdomen must be quite uncovered, though a practised observer may allow a very thin handkerchief to be interposed, if it appear advisable. The patient

must be lying down, and the abdominal walls relaxed by instructing her to draw up the knees. The observer, standing on the patient's right side, holds the stethoscope with the left hand, grasping it firmly close to the end which is to be applied to the abdomen. The stethoscope is then firmly, gently, but steadily pressed inwards over the spot to be examined, and there maintained while the ear is applied. When the abdomen is tight, it will often be impossible to hear the fœtal heart, unless these precautions are attended to; and, indeed, it is sometimes necessary to press the end of the stethoscope inwards a considerable distance, to obtain the desired result. This is particularly the case when there is a tolerable quantity of liquor amnii in the uterus, when there is any fluid in the abdomen covering the tumour to be explored, when intestines are interposed, or when the walls of the abdomen are unduly loaded with fat. Unless the stethoscope be held as directed, it is apt to roll about over the surface of the uterine tumour. The employment of sudden force is very objectionable: the pressure of the stethoscope inwards, when necessary, should be slow and gradual. The examination must be conducted in a quiet room.

The sounds which may be heard on applying the stethoscope to the abdomen of a woman who is not pregnant, may be confounded with those due specially to pregnancy, and *vice versâ*. The sounds coming under the first head are—*a*. Sounds produced by passage of flatus from one part of the intestines to another; *b*. Sounds due to pulsation of the heart; *c*. Sounds due to pulsation of great vessels in abdomen, in aneurisms of the abdomen, &c.; *d*. Sounds due to respiration. Now, respecting the sounds due to motion of flatus, &c., within the intestines, a very little practice will prepare the observer to at once recognise them. Respecting the sounds due to pulsation of the heart, some important facts are to be remembered. It has been occasionally found that the beats of the mother's heart were quite audible very low down in the abdomen, and there are cases on record in which, the heart beating with unusual rapidity, e. g. 120–130, and heard about the neighbourhood of the umbilicus, these pulsations have been mistaken for those of the fœtal heart. This shows the necessity for counting the pulse of the patient before employing auscultation. The sounds proceeding from the great vessels, &c., of the abdomen, will not be described just now, as they will be more fully considered presently. Lastly, the sounds produced by the respiration of the patient are in rare instances transmitted to that

part of the abdomen likely to be examined in cases of suspected pregnancy.

Next as to the sounds heard in cases of pregnancy. These are—*a.* Sounds produced by pulsation of the fœtal heart; *b.* The placental or uterine souffle; *c.* Sounds due to pulsation in the funis accidentally pressed upon—funic *souffle; d.* Sounds due to the movements of the fœtus. Each of these requires a separate description.

a. Sounds of Fœtal Heart.—If the patient be advanced in pregnancy, to the seventh or eighth month, and the circumstances of the case are ordinary ones, the fœtal heart is usually heard to beat over a space comprising three or four square inches of the abdominal surface, this spot being situated to the left of the umbilicus and a little below this point, or, as it is generally stated, midway on a line drawn from the umbilicus to the anterior superior spine of the ilium. The situation in which the sound is heard will vary according to circumstances. Thus, if heard at the very earliest moment at which it is audible, the stethoscope would be applied in the middle line just above the os pubis; as pregnancy advances, the point of maximum intensity of heart's beat would travel upwards, and to the left. The precise modification of situation here indicated would be observed only in normal cases. Again, the locality is affected by the position of the fœtus *in utero*. Generally speaking, when pregnancy is far advanced, the fœtus lies with its head downwards, its back to the left side, and it is through the back of the fœtus, which is made by pressure of the stethoscope to come into contact with the uterine wall, and the latter with the abdominal wall, that the fœtal heart-beat has to be conducted, in order to reach the ear of the observer. If the fœtus be differently placed in the uterus, if the back be turned to the right side—the next most common circumstance—then the heart-beat is heard below and to the right of the umbilicus. And if the fœtus be so placed that the breech is lowest in the pelvis, the heart-beat is heard to the right or left of the umbilicus, according to circumstances, but *above* it—that is to say, supposing the pregnancy to be pretty far advanced. Thus it will be seen that, pregnancy being far advanced, there are four points at or near which the fœtal heart-beat may be expected to be heard: most commonly to the left and below the umbilicus; next in order to the right, but still below the umbilicus; next in order above, and to the right of the umbilicus; next above, and to the left of the umbilicus. At the period when the uterus lies to

one side of the abdomen, the situation at which the fœtal heart is heard will be correspondingly modified.

Next as regards the nature of the sound itself, as heard by means of the stethoscope. The sound is like that of the heart of a child in miniature—it is a double sound, or rather a succession of a pair of sounds, the one rapidly following the other. They have 'generally received the familiar name of tic-tacs, from their re-'semblance to the sounds of a watch.' (Montgomery.) It is scarcely possible to mistake this peculiar sound for anything else, and *vice versâ*: the sound is one *per se*. Its force and intensity are liable to variation: thus, it is very weak and feeble when first heard, and acquires strength as pregnancy advances. But the *rapidity* of the fœtal heart-beat, the fœtus being healthy, remains almost constantly the same up to the time when labour has fully set in; and this fact has been established by the observations of several eminent obstetric auscultators, one of the most recent being Hüter.* The average rate of the fœtal pulsation, according to Hüter, who has made 1,195 observations on the subject, is 132. In 10 per cent. of his cases it amounted to 144, in 83 per cent. to 132, in 7 per cent. to 120, and the higher figure was due to the presence of a disturbing element—movements of the fœtus—in most of the cases. It may here be mentioned that in practice it is found very convenient to follow the method of Schwartz in counting the fœtal pulse—that is to say, to reckon the number of beats in *five* successive seconds, instead of the ordinary method of counting the number of beats in fifteen seconds. Thus, the ordinary fœtal heart-beat is 11 for five seconds, mounting to 12 and descending to 10 in exceptional cases. The statement of Montgomery is, that the pulsations 'vary in number from 120 to '160; but the limits are in general between 130 and 150.' This does not really differ from the figures given more recently by Hüter. The rate of frequency is affected by certain circumstances, as previous observers had noticed; but Hüter gives more precise indications on this point. His general results are, that, ordinarily fluctuations in the maternal have no effect on the fœtal pulse; that when the mother is the subject of severe inflammatory disease, the fœtal pulse may be permanently increased in frequency; that movements of the fœtus always accelerate the fœtal pulse, this elevation being transitory. Frankenhäuser has broached the theory, that the frequency varies according to the sex of the fœtus —that the fœtal pulse has a low average when the fœtus is of the

* *Monatsschrift für Geburtsk.* Sup. vol. for 1861.

male sex, and a high average when of the female sex ; the average number for males being 124, the average for females 144. The truth of these conclusions has been tested separately and independently by Breslau, Hennig, and Haake, whose observations, made on an extensive scale, do not confirm the theory in question. Steinbach has made further observations, with a similar object, in 56 cases. Out of the 56 cases, a wrong diagnosis was made thirteen times only. Steinbach finds it necessary to modify the figures given by Frankenhäuser, the mean number for males being 131, and for females 144. Many circumstances are capable of modifying the frequency of the fœtal heart-beat; and even if Frankenhäuser's theory should prove on the whole to be correct, this would vitiate the results obtainable in particular cases.*

Next as regards the period of pregnancy at which the fœtal heart may be heard. Practically, it is a sign of pregnancy which may be ordinarily detected in the *fifth month*. If the observer be experienced, and if circumstances be favourable, it may be heard earlier than this. Depaul heard it as early as eleven weeks and four days after conception—that is, near the end of the fourth month. After it has been once heard in a particular case, it should be possible to hear it up to the end of pregnancy. Hüter states that he has never failed to hear the fœtal heart in the sixth month, unless in cases where the fœtus has proved to be dead. Depaul and Jacquemier failed to hear the fœtal heart in only eight cases out of 906, and in six of these the fœtus proved to be dead.

With respect to the value of the sound of the fœtal heart as a sign of pregnancy, it is at once the surest and the best sign available; and to an observer experienced in obstetric auscultation, and knowing the fallacies to be avoided, it is an absolutely sure sign of pregnancy. The fact that in a woman whose pulse is 80 in the minute, a double sound *can* be heard in the hypogastric region, 130 in the minute, is a positive indication that pregnancy is present. The sign in question is the more valuable that it can be discovered (pregnancy being far enough advanced) without any other examination of any kind—without asking a single question. Such is the case when the fœtal heart *can* be heard. But the absence of the sound, or the inability of the observer to hear the sound, is not always a proof that the woman is not pregnant. The fœtus may be dead. The value of the observation in this

* The observations on this interesting subject, and above referred to, will be found in the volumes of the *Monatsschr. für Geburtsk.* for the years 1859, 1860, 1861.

particular will entirely depend on the skill of the observer. In a case where a difficulty is found in hearing the sound, it is well to seek for a hard part of the tumour, and to apply the stethoscope over that point; and, again let it be stated, practice will do much to remove difficulty of this kind. If the abdomen evidently contain fluid in addition to the tumour we suspect to be the pregnant uterus, care must be taken to apply the stethoscope *on* the tumour. If the quantity of liquor amnii be much larger than usual, we may be able to hear the fœtal heart only after careful and prolonged search, and then very faintly. The fœtal heart-beat, when heard, is a positive sign of pregnancy; when it is not heard, we have to make our diagnosis of pregnancy on other grounds.

b. The Uterine Souffle.—This is a sound synchronous with the mother's pulse, and varying, as the mother's pulse, in frequency. It is ordinarily, and very accurately, compared to the sound produced by blowing gently over the mouth of a wide-mouthed bottle; still more closely it resembles the sound heard in the large arteries of the body, when these are at all subject to pressure. The uterine souffle is heard more generally in one or other of the inguinal regions, at an advanced stage of pregnancy—most commonly, according to Montgomery, at the situation of the right Fallopian tube. It is, however, variable in position, and may be heard in rare cases as high as the fundus of the uterus. Generally, the surface over which it can be heard is limited to a space a few inches in diameter or less. It is not always to be heard; thus, Naegele found it absent in 20 out of 600 cases. There has been much dispute respecting the cause of the sound in question. By many it is supposed to be produced in the walls of the uterus, near, or at the insertion of, the placenta (hence the name occasionally given to it—the 'placental souffle'); by others it is supposed to be produced by the pressure of the gravid uterus on the large vessels behind it. It is very certain that, whether produced in, or by means of, the uterus in a gravid state, it is capable of being closely simulated under conditions altogether different. It may be detected at a somewhat earlier period of pregnancy than the sound of the fœtal heart. As regards the value of the uterine souffle as a positive sign of pregnancy dependence can only be placed upon it, when the observer is well-skilled. It is a sign of pregnancy which has undoubtedly value, but no practitioner could be recommended to make oath as to the presence of pregnancy judging from this sign alone. In cases where the fœtus is dead and this souffle is heard it is of good diagnostic service.

c. The Funic Souffle.—In rare cases, the funis lying over a solid part of the fœtus, and being interposed between it and the stethoscope, a souffle is heard, *double*, and having the frequency of the fœtal heart-beat. This, which is Kennedy's explanation of the matter, is the one more generally received. The sign has little practical value, as it is so rarely and so accidentally heard.

d. Sound produced by Fœtal Movements.—This sound, as a sign of pregnancy, has received some attention from the fact that Naegele, its discoverer, ascertained that it could be heard first at a very early period of pregnancy—in the third month—before other auscultatory signs are available, and indeed before other signs, some more, some less important, are discoverable. Depaul, who has written an almost exhaustive work on fœtal auscultation, confirms Naegele's views. The sound in question is a slight dull sound accompanied by a slight or sudden impulse or jerk, and it is the sound of the movement which can be felt by the fingers as before described (see p. 160). Depaul heard the sound in question in nine out of twelve women who had not passed the twelfth week of gestation.

The value of the sign may be gathered from what has been stated. An experienced observer might thus obtain very early evidence of the presence of pregnancy. One not very well experienced in obstetric auscultation would pause and wait until more positive and reliable information could be procured before pronouncing a decided opinion.

Lastly, in respect to all the signs derivable from auscultation, it will have been gathered from what has been said that it is the fœtal heart-sound, and that alone, in which any confidence can be placed in the diagnosis of ordinary cases. Unless the observer be very acute, auscultation is of no service when the woman has not passed the thirteenth or fourteenth week. Four months passed, auscultation becomes of the highest practical value.

General Remarks on the Diagnosis of Pregnancy from other Forms of Abdominal Tumour.

The physical characters of the abdominal enlargement due to pregnancy have now been described; and it is not too much to say that an observer who has made himself practically familiar with these characters will rarely find much difficulty in the diagnosis of pregnancy, when this condition is present. It will now be necessary, however, to mention the other conditions with which

pregnancy may be, or has been, confounded, and to indicate briefly the diagnostic points to be kept in view.

From *fibrous tumour* of the uterus pregnancy is distinguished by the duration of the disease, usually chronic, by the absence of changes such as are due to pregnancy in the os uteri, by the absence of the changes in the areola, by absence of auscultatory signs of presence of a fœtus, absence of ballottement, &c. A most painful case is recorded by Dr. Bedford, of a young lady affected with a fibrous tumour of the uterus and who was pronounced by two medical men to be pregnant, there being no ground whatever for the assertion. The case will be found related at length in his valuable work,* and should be a warning to all as to the danger of positively expressing opinions which are not based on firm and sufficient grounds. The possibility of pregnancy coexisting with a fibrous tumour of the uterus should not be forgotten.

From *polypus of the uterus* pregnancy is to be distinguished in the same way. The hæmorrhages more usually associated with polypi of the uterus would generally lead the observer to exclude pregnancy from the consideration.

From *distension of the uterus with fluid* pregnancy is distinguished by the history, which shows a progress unlike that of pregnancy, by the absence of the areolar changes, and by the absence of auscultatory signs. In both, menstruation would be absent; in both, the breasts might be swollen and painful. In cases of distension of the uterus by *gas*, the signs are peculiar—clearness of percussion over the tumour, &c.

From *carcinoma of the fundus uteri*, and from *hypertrophy* of the uterus, pregnancy is distinguished by the pain, discharge, and general indisposition present in the former affection; by the progress of the case in the latter. The hypertrophied uterus does not grow. In neither instance can auscultation give other than negative results.

The *distended urinary bladder* could hardly be mistaken for the gravid uterus, unless great carelessness were shown. The catheter should be used in any case where there is the smallest doubt. It may happen that the bladder is distended while the patient is at the same time pregnant (see p. 166), or while there is a large fibrous tumour of the uterus present.

From *ovarian dropsy* pregnancy is distinguished most certainly

* *Clinical Lectures on Diseases of Women and Children*, p, 50, 4th ed., quoted in Dr. Tanner's work, p. 162.

by the presence or absence of auscultatory signs. The history of the case generally throws great light upon the diagnosis, but not invariably so. The most certain means of diagnosticating between the two, auscultation apart, is by vaginal examination. Thus, if we find a tumour in the abdomen reaching above the umbilicus, while the os uteri is unaltered, the cervix hard and firm, and the body of the uterus not enlarged, pregnancy is under these circumstances nearly impossible. The other diagnostic indications drawn from a vaginal examination have been described. Ovarian dropsy may coexist with pregnancy, and in such a case the symptoms would be necessarily, at first sight, perplexing. The two tumours might or might not be detected, and be separable, externally. The os uteri would be altered as in pregnancy; auscultation would give positive results. The other symptoms present would vary in different cases.

From *ascites* pregnancy should be readily diagnosticated. The clearness of percussion in the flanks, and the presence of a rounded tumour in the hypogastric region, would be conclusive against ascites. Auscultation and vaginal examination would give positive evidence of pregnancy. Pregnancy and ascites is a combination not very rare, and its diagnosis may be difficult; for if the ascitic effusion be considerable, the uterine tumour may be completely surrounded by it and hidden from external view. Auscultation might give negative results under such circumstances; but a vaginal examination and an inspection of the breasts would give some reliable indications.

Fat in the omentum and abdominal parietes could not be mistaken for pregnancy, if auscultation and vaginal examination were had recourse to. It could only deceive those who depend on abdominal enlargement as a sign of pregnancy. The case of the celebrated so-called prophetess, Joanna Southcote, must be mentioned in connection with this question. This woman, aged 64, affirmed that she was pregnant and deceived several medical men. The presence of a rounded tumour in the abdomen and a sensation conveyed to the hand as of fœtal movements appear to have been the chief grounds for this belief. At her death the abdominal walls were found four inches thick in fat, the omentum was one mass of fat, the uterus small. It was thought that this tumour felt during life was the bladder purposely distended with urine, the pseudo-motions being probably due to contractions of the recti muscles.

Alterations in the Colour of the Vagina.—A very remarkable alteration in the colour of the lining membrane of the vagina is usually observed in *women who are pregnant*; and the presence of the alteration in question is a valuable sign of gravidity.

For a knowledge of this sign of pregnancy we are indebted to Kluge and Jacquemier. The statements of these observers have received confirmation from extended observations on the subject made by Dr. Montgomery.* The shade of colour presented by the vaginal mucous membrane is a *livid, dusky hue*, 'altogether 'different from the shade of colour seen in ordinary vascular con-'gestion, even when intense, or in cases where there are varicose 'veins,' and it is not capable of being simulated by any other kind of congestion. The alteration in colour affects the mucous membrane at the inside of the nymphæ near the orifice of the urethra and the clitoris, and becomes more marked as we ascend towards the upper end of the vagina and os uteri. The alteration is thus most evident in the latter situations. It is seen in patches, not being uniformly diffused. Hæmorrhoids will not produce this colour of the vagina. Dr. Montgomery had not seen an instance in which it was clearly visible within the first two months; it was frequently not developed until the fourth or fifth, and was sometimes hardly perceptible at all; but he had not seen a single instance in which its perfect condition, as observed in healthy pregnancy, was simulated in any other state of the system.†

The absence of the dusky, livid hue in question is thus not indicative absolutely of absence of pregnancy, but its presence, when well marked, appears to be a sure sign of pregnancy; and one moreover which may be available at a very early period of gestation.

Condition of the Breasts.—The examination of the breasts furnishes us with very important data for the diagnosis of certain conditions or diseases. In cases of suspected pregnancy, the appearances presented by these organs offer not rarely decisive evidence for or against the supposition, as the case may be; provided always that the observer be experienced in the matter, and has so familiarised himself with the usual appearances and changes in these organs produced by pregnancy, as to be able to distinguish them, and to assign a due value to the particular

* *Signs and Symptoms of Pregnancy.* 2nd ed. p. 239.
† *Loc. cit.* p. 244.

changes noticeable in the case under examination. Such familiarity can only be acquired by practice and careful observation.

The diagnosis of pregnancy from an examination of the breasts is not always possible, but in many cases it is so; and, as remarked by Dr. Earle,* the signs of pregnancy observable in the breasts have the peculiar value, that while from a variety of causes an examination of the abdomen or vagina is often not obtainable, there is never any difficulty in procuring an examination of the breasts.

The changes observable in the breasts may be considered under the following heads: alterations in the size and texture of the breasts; and alterations visible to the eye only.

1. *Alterations in Size and Texture.*—A swelling of the breasts is popularly considered a good sign of pregnancy. As will be now shown, however, it is a sign which is not in any way to be depended upon. As a rule, the breasts increase in size during pregnancy, and they begin to increase in size usually at a very early period; but many other causes may produce a like increase in the size of the glands. The increase in size may be due simply to *fat*. The fact that the other parts of the body participate, or not, in the increase of the fatty deposit, would assist us in distinguishing the true nature of the enlargement in such a case. The breasts when thus increased in size are more pendulous in appearance, and, what is more important, are much softer to the feel, than in cases of pregnancy. The increase in size is evidently due to deposit of a soft cushiony elastic material—fat—in and around the glands, and beneath the skin covering them. At the same time there is an absence of certain important changes in the skin, which are visible to the eye; these latter will be presently described. Enlargement of the breasts from pregnancy is recognisable by the touch, the sensation conveyed differing essentially from that due to fatty deposit in the gland; hard, knotty, tolerably well-defined masses—the lobules of the glands—are felt beneath the skin, these being arranged symmetrically around the common centre. The normal anatomy of the mammary gland must be known, or the observer will fail to appreciate to the full the characters now alluded to. In the simply fatty breast the enlargement present is chiefly constituted by a soft, uniform structure: the lobules of the gland may still be recognisable to

* *On the Mammary Signs of Pregnancy and Recent Delivery.* London, Davies, 1862.

the touch, but they are small in proportion to what is observed under other circumstances. An increase in the size of the breasts due to fat is likely to be observed in women at the climacteric period; and the fact that the menses are irregular, or absent, that the breasts are painful, while at the same time the abdomen is noticed to be larger, often induce women at this age to believe themselves pregnant. In such cases, too, it has been occasionally noticed that a serous fluid, not unlike milk, exudes from the nipples, and this appears to confirm the erroneous conclusion formed. It is hardly necessary to observe that the breasts may be enlarged from chronic diseases of various kinds. In most of such cases, however, the enlargement has this distinguishing peculiarity, that it is limited to one breast, or to one side of the breast; in pregnancy the enlargement is uniform, and affects the gland on the two sides equally. There is a rare form of disease, a kind of hypertrophy of the breasts, in which may be exhibited a more general and universal enlargement, but for many reasons it would be difficult to confound such cases with cases of pregnancy.

Enlargement of the breasts is sometimes a consequence simply of marriage; the glands become tumified, painful, and more knotty, than usual, and, in point of fact, the changes observed somewhat resemble those present in cases of pregnancy. The swelling is, however, temporary; after a few days it subsides, or, if it continue, no further changes are observed in the skin around the nipples, such as will be presently described as associated with pregnancy. A slight enlargement of the breasts is frequently present at the catamenial periods under ordinary circumstances; here the breasts return to their normal state during the catamenial interval. Temporary suppression of the menses is very generally associated with mammary enlargement.

Any condition resulting in distension of the uterus may occasion swelling of the breasts. Retention of the menses in cases of imperforate hymen is perhaps the most common of the cases coming under this category. The presence of ovarian tumours is frequently associated with enlargement of the breasts.

From what has now been said it will have been rendered evident, that the enlargement of the breast must be a peculiar kind of enlargement to give good occasion for the suspicion that pregnancy is present. The mere increase in size is of itself worth nothing in the matter of the diagnosis.

It does not always happen that when the patient is pregnant

the breasts become enlarged. Thus, neither positively nor negatively does the sign in question give reliable information.

2. *Changes visible to the Eye.*—The great value of certain appearances in the skin surrounding the nipple as diagnostic of pregnancy has been pointed out particularly by Dr. Montgomery, and more recently in the work of Dr. Earle. The changes produced in the nipple itself, in the skin immediately surrounding the nipple—the areola—and in the skin covering the remainder of the breast, must be severally considered.

Changes in the Nipple.—One principal alteration in the nipple visible to the eye, and consequent on pregnancy, is a slight increase in its size. It is more turgid and vascular, it is rather darker than previously,* and towards the end of pregnancy the colour may become very dark, approximating to that of the skin around, presently to be alluded to. The apex of the nipple during the latter half of pregnancy is usually more or less scaly in appearance, due to the fact that a slight exudation has been going on, on the drying up of which little scales are left behind. Dr. Earle correctly observes, that the condition of the nipple itself is of little practical importance from a diagnostic point of view. But the most important diagnostic fact connected with the nipple is the possibility or not of squeezing from it a secretion. The precise value of this latter sign must now be particularly examined.

In order to ascertain in a given case whether a secretion be actually present or not, it is necessary to manipulate in a peculiar manner, too familiar to need description. The secretion is thus pressed outwards from the recesses of the gland, and exudes at the orifices of the ducts on the nipple. It must be remembered that human milk is a serous-looking fluid, almost transparent, and unlike the milk of cows. The presence of a secretion of milk in the breasts is a valuable sign, but by no means a certain sign, of pregnancy. Cases are on record in which girls have had such a secretion quite unconnected with pregnancy. Montgomery refers to three very well-marked cases of this kind: in one case, that of Baudelocque's, it was observed in a little girl aged eight years only. Again, women advanced in life sometimes exhibit this secreting power in the breasts; and this is not astonishing, when we find it indisputably proved that, under certain circumstances, the breasts of individuals of the male sex have been known to secrete a fluid to all intents and purposes identical with milk. These exceptional

* '. . . . crassescit papilla, inflata videtur, color ejusdem fit obscurior, simili colore distinguitur discus ambiens.' Rœderer, *Elem. Art. Obst.*

cases will be found recorded at length in the treatise of the author just referred to, and in Dr. Tanner's more recent work. Next it is to be observed, that women who have once borne one or more children not unfrequently continue to secrete milk for a very considerable time—for many years in some instances; and hence, if a woman has had children, presence of milk in the breasts has very little value as a sign of pregnancy, very little, at least, compared with the other case, that of a woman who has never been pregnant before. 'Altogether,' says Dr. Montgomery, 'it is a sign 'which we cannot expect to make generally available as a guide in 'forming an opinion in a doubtful case.' Dr. Tanner has found the presence of milk indicative of pregnancy as early as the ninth or tenth week, and he considers the presence of a secretion containing, on microscopic examination, the characteristic milk globules, with large oil particles and colostrum granules, as an early and reliable sign of pregnancy in a woman who has never given birth to a child.* And this opinion is doubtless a correct one, applied, as Dr. Tanner observes, to the diagnosis of cases of amenorrhœa, such as ordinarily come before us, and when there is no reason for supposing that the patient has been stimulating the mammary glands by the application of galactagogues, or allowing the nipples to be sucked by an infant. And whether we accept evidence drawn from the presence of milk as positive or not, the sign has this great value, that it is one easily observed, and that we may be thus led to search for, and detect, the presence of other more reliable and more decisive signs of pregnancy.

Changes in the Areola.—The changes observable in the areola are of very great importance. William Hunter, and more recently Montgomery and Earle, have attached a great degree of value to these changes as a sign of pregnancy. The changes in question will be now described. Around the nipple there is a narrow band of integument of a delicate texture, resembling pretty nearly the surface of the nipple itself. This circular band is of variable width in different cases; it is the areola. When pregnancy occurs, the areola becomes larger, altered in colour, presents on its surface certain eminences not before observable—not observable to such a degree at all events—and it becomes altered in some other particulars. Each and all of these changes require a separate consideration, but it may be premised that the presence of one alone of them is generally valueless for purposes of diagnosis. The value of these areolar changes is unquestionable, but it appears

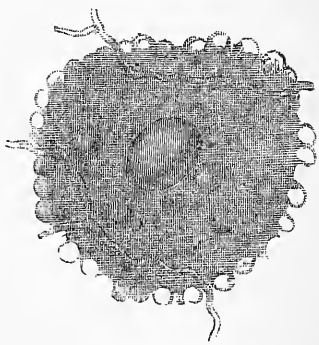
* *Op. cit.* p. 63.

from observations and from facts which have come under my notice that the areola may, apart from the existence of pregnancy, undergo, in women indulging in sexual intercourse, changes which resemble very closely those due to pregnancy.

One change observed, and to which Montgomery has specially directed attention, 'is a soft moist state of the integument, which appears a little raised above the surrounding skin, and in a state of turgescence.'* This change is observable as early as the end of the second month. It is of more diagnostic value in the case of primiparæ.

The deepening of the *colour* of the areola is the one which has been the best known. The degree of the change in the colour varies in different subjects. In light-haired women it may be slight, but in dark-haired women it is often very striking and intense, the areola in such cases presenting an almost complete blackness at the end of pregnancy. The period of pregnancy at which the change in the colour is evident is not by any means the same in all women. During the first two months little alteration of colour is evident, but in the third month the tint becomes perceptibly darker in most cases. In the fifth month it is ordinarily decided, and from this time to the end of pregnancy the tint deepens. In Montgomery's work will be found some beautiful and accurate pictorial representations of the areola at the third, fifth, seventh, and ninth months respectively; the areola of an albino is also depicted. A dark-coloured areola is by itself, and in a woman who has had children, more especially if she be of dark complexion, not of great value as diagnostic of pregnancy. In conjunction with other changes it has great value.

Fig. 31.†



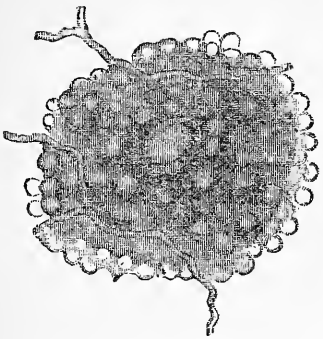
The *size* of the areola is next to be considered. This also varies in different persons. The areola may be only a quarter of an inch broad, or it may have a diameter of as much as three inches. When it is very dark it is usually very large also. The point to be observed is *increase* in the width of the areola; '. . . discus ambiens, qui in latitudinem majorem expanditur'

* *Op. cit.* p. 105.

† Fig. 31, after Montgomery, shows areola at third month.

(Rœderer); and this is, other signs agreeing therewith, indicative of pregnancy. As the pregnancy advances the width of the areola increases. The areola may in rare cases be found at the end of pregnancy not more than a quarter of an inch broad; absence of a wide areola is therefore not a positive sign that pregnancy is absent.

Fig. 32.*



The Areolar Glands or Follicles.—The most important, the most characteristic, and the most universal of the changes observable in the areola, and due to pregnancy, consists in the formation of little glandular eminences projecting from the surface of the integument covering the areola, not unlike the head of a pin in size and shape, well described by Rœderer in his celebrated work in the following terms:—'discus ambiens . . . parvisque eminentiis, quasi totidem papillulis, tegitur.' These little eminences have been termed miniature nipples; Morgagni detected lactiferous tubes going to each of the little tubercles in question, and the milky fluid, it has been stated, has been observed to issue from them under favourable circumstances. The little eminences now under consideration begin to show themselves as early as the end of the second month of pregnancy; they subsequently increase in number, and also in size. They are more thickly placed close to the nipple; are usually from twelve to twenty in number; the elevations to which they give rise are perceptible to the eye and to the touch.

There is another point of some importance. The little eminences due to presence of areolar glands often persist and do not disappear after pregnancy and suckling have come to an end. In one case I distinctly noticed areolar glands well marked, when the lady had not had a child or given suck for five years. The mere presence of these areolar glands cannot therefore, I believe, be relied on as a sign of pregnancy in a woman who has had children. As a sign recognisable at a very early period, as a sign which we find most constantly of all present, the presence and *growth under observation* of the areolar glands or follicles is, however, of the greatest practical assistance in the diagnosis of pregnancy.

* Fig. 32, from Montgomery, shows areola at seventh month.

Secondary Areola.—This term is applied to a change in the areola of a peculiar character. At the fifth month, not earlier, according to Dr. Montgomery's experience, are observed 'numerous round spots or small mottled patches of a whitish colour 'scattered over the outer part of the areola, and for about an inch 'or more all round presenting an appearance as if the colour had 'been discharged by a shower of drops falling on the part.'* As pregnancy advances these appearances are intensified. Dr. Montgomery's opinion was that these appearances are quite distinctive, 'exclusively resulting from pregnancy.'

To sum up these remarks on the characteristic changes in the areola—we have increase in size, change of colour, development of areolar glands, presence of secondary areola, moist puffy state of the integument. If the case before us be one of pregnancy, we shall find these changes present in association with each other; some will be found more marked than others in different cases.

Other Changes in the Breasts visible to the Eye.—In cases of pregnancy the veins running beneath the skin become more visible than usual. This enlargement of the veins is symmetrical; it is accompanied always by hardening of the breasts, by increase in their size.

Another change to which reference must be made is presence of little cracks in the integument, giving rise to formation of narrow sinuous white lines radiating irregularly from the centre of the breasts, and produced by the tension and stretching of the skin. The presence of these lines is a sign of pregnancy, if the patient have never conceived or given suck, and if the enlargement of the breasts before us is evidently not due to fat; but under other circumstances it is valueless and may mislead.

General Value of Changes in the Breast as diagnostic of Pregnancy.—Of the value of the individual changes in the breast as signs of pregnancy, which have been now considered *seriatim*, but little remains to be added. It is to be remarked that these signs, taken as a whole, should, in reference to the diagnosis of the case before us, be considered side by side with other signs of pregnancy before we proceed to pronounce a positive opinion. In cases of pregnancy the symptoms march onwards with a certain amount of regularity, and if one sign be present another should be present also. Thus, if in the case before us we find what we consider to be a perfect instance of the pregnancy areola of about the fifth

* *Op. cit.* p. 108.

month of gestation, there should be at this time a tumour discoverable in the abdomen; failing to find a tumour, we should at once conclude further investigation of the case to be necessary. The mistakes which have been committed in the diagnosis of pregnancy will on enquiry be generally found to have resulted from the observer attaching an undue importance to some one sign on which he has been accustomed to rely, and from his having omitted to ascertain the presence or absence of other, perhaps more important, signs of pregnancy.

Comparative Estimate of the Value of different Signs of Pregnancy.—Perfect evidence of the existence of pregnancy is not obtainable until after the third month, unless in those very rare cases where the fœtal heart may be heard just at the end of this time. The evidence obtainable before this date only enables us to come to the conclusion that pregnancy is *probable*. The signs (probable ones) of pregnancy up to this time are—suppression of the menses, swelling of the breasts, descent of the lower part of the uterus in the pelvis, flattening of the abdomen.* An examination will not usually enable us to give a positive opinion, if undertaken at this time.

After the end of the third month, during the fourth and fifth, an abdominal and a vaginal examination give, or may give, decisive indications. Menstruation is still absent in ordinary cases; the breasts continue to enlarge, and the areolar changes become developed; the os uteri undergoes its characteristic changes; the uterus can be felt to be enlarged from the vagina and above the pubes; the vagina assumes a dusky hue; the motions of the fœtus can be felt by the observer and by the patient; ballottement is recognisable; the sounds of the fœtal heart can be heard.

After the fifth month and up to the end of pregnancy, the symptoms just described *continue* and become intensified.

The signs of pregnancy have been divided into three classes by Dr. Montgomery: 1. Presumptive; 2. Probable; 3. Unequivocal. Practically, however, there is no great difference between what is presumptive and what is probable; and if distinctions are to be drawn between shades of belief, the division might be extended *ad infinitum*. It appears quite sufficient to arrange these signs

* This flattening of the abdomen was reckoned by the older authorities as an early sign of pregnancy.

'En ventre plat
Enfant il y a.'

Thus ran the old proverb. Montgomery, *op. cit.* p. 157.

under two classes—1. the certain, and 2. the probable, signs of pregnancy.

1. The *certain signs of pregnancy* are :—

The active movements of the child unequivocally felt by another ;

The presence of the child *in utero* ascertained by ballottement;

The sounds produced by the pulsations of the fœtal heart.

A positive opinion may be expressed if any one of these be distinctly observed, the observer being one experienced in such enquiries, and aware of certain possible sources of fallacy. These latter have been described in their proper place. On the other hand, no positive opinion can be expressed if none of these signs be discoverable, however strongly the observer may feel inclined on other grounds to give his final decision. And as caution should be exercised in this particular, so also caution is necessary in giving an opinion that pregnancy is not present unless the negative evidence be very decisive.

2. *The probable signs of pregnancy* need not be enumerated. They include all those not included under the first head, and to each of them this remark more or less applies—that their value as probable signs of pregnancy is exceedingly different in different cases and at different times; the circumstances of the case may elevate one of these probable signs into the position of a certain one, so far as that case is concerned, but this particular sign may be valueless in the next instance.

CHAPTER VIII.

FLEXIONS, OR ACQUIRED DEFORMITIES OF THE UTERUS.—PATHOLOGY AND GENERAL HISTORY.

Flexions of the Uterus.—Definition—Anatomical Peculiarities of the Uterus predisposing to Change of Shape—Suspension of Uterus, with Freedom of Motion of the upper part or Fundus—Necessity of this Adjustment with reference to Pregnancy—Hindrances to Alterations of Shape and Position of the Uterus—Causes of Flexions (*a*), Predisposing; Uterine Attachments; Perinæum; Involution of Uterus. (*b*), Exciting; Accidents, Exertions, Strains, Falls, Position of Body.—Varieties: Anteflexion, Retroflexion, Lateriflexion.

Effects of Flexions:—Congestion of Uterus, &c.—Hypertrophy of Uterus—Descent of Uterus (First Stage of Prolapsus)—Contraction of Cervical Canal; Disturbance of Menstrual Function—Leucorrhœa and offensive Discharges from Retention *in Utero*—Sterility—Abortions and Retention of Ovum after Abortion—Pains and Discomforts: Disturbance of Defœcation and Micturition; Impairment of Locomotion; Pain on Intercourse; Nervous Derangements.

In the present chapter it is intended to give a description of those alterations in the shape of the uterus, those acquired deformities, which, generally known under the name of 'Flexions,' give rise to so many and so important disturbances in the female economy as to justify us in regarding them the principal disease to which the generative organs in the woman are liable.

The position of these acquired deformities in uterine pathology has been already made the subject of special remark. The numerical frequency of flexions of the uterus has been pointed out in Chapter I., and the special pathological significance and relations of these acquired deformities of the uterus have been considered in Chapter III.

The subject must now be considered by itself, and the disease more accurately and definitely studied. This will be done in the following manner and order:—

1. The causes, varieties, and effects of Flexions.
2. Retroflexion and retroversion of the uterus, with details of cases.
3. Anteflexion and anteversion of the uterus, with cases.
4. Treatment of Flexions.

CAUSES, VARIETIES, AND EFFECTS OF FLEXIONS, OR ACQUIRED DEFORMITIES OF THE UTERUS.

The disease now to be considered may be very accurately defined as follows:—*disease of the uterus the essence of which is a change of shape.* That is, on the whole, perhaps, the best method of formulating the opinion which I wish to express, and it conveys the whole idea. It will be observed that in this definition it is not implied that flexion is the only thing which is important, or that it is the only condition which is or may be wrong in the uterus; but it is implied that flexion is the most important element in the matter.

Method of Suspension of the Uterus.—As an introduction to what has to be stated later on, it will be well to consider the anatomical relations of the uterus, predisposing, as it can be shown they do, to a change of its shape. The manner in which the uterus is suspended in the pelvis is very peculiar. The upper part of the uterus, which is the main part of it, has no attachments, posteriorly or anteriorly, sufficient to absolutely maintain it in one position. The uterus is suspended in the middle of the pelvis, but it is suspended in such a manner that a degree of motion is allowed anteriorly and posteriorly, and there is much more motion allowed at its upper than at its lower part. It rarely moves from side to side, because laterally there are attachments which bind the uterus pretty effectually to the sides of the pelvis. And with reference to the cervix of the uterus, this is kept in its place by means of its connection with the bladder and the vagina at the upper part. The axis of suspension of the uterus, as it has been very properly designated, is represented by a horizontal line passing through the uterus from side to side, and about the situation of the internal os uteri. This leaves about half of the uterus above this part, and about one-half below it. The lower half is more effectually fixed, and the upper part is far less effectually fixed, except in reference to lateral motion, which is not allowed except to a slight degree. What are the *hindrances*, it may be enquired, to change of position of the upper part of the uterus? That is the part with which we are mainly concerned. It is quite obvious that the broad ligaments, which are the lateral attachments of the uterus, impede lateral motion. The round ligament is an important structure. It is attached to the upper part of the uterus on its anterior aspect; and when

the round ligaments are intact, the motion of the upper part of the uterus backwards is, to a certain extent, but to a certain extent only, controlled. They seem to be so placed as to be intended to prevent this occurrence. With reference to the motion of the fundus uteri forward, there appears to be very little hindrance. The bladder is the chief obstacle to anterior motion of the uterus. The bladder, when distended, prevents the fundus uteri from falling forwards; but of course the bladder is not always full, and when it is empty there is nothing to preserve the uterus in its position—nothing of a special character, that is to say. Another element in the case next to be mentioned constitutes an important hindrance to anterior or posterior motion of the fundus uteri: it is the resistance of the uterus itself. The healthy uterus is an organ having very thick walls. The cavity is exceedingly small in proportion to the thickness of those walls, as will be seen on reference to fig. 33.

Fig. 33.

The thickness of the walls of the uterus, as is very evident, forms a very important element as a resistance to alterations of the position of the fundus uteri. It is apparent that if the cervical part of the uterus be held pretty firmly in its place, the position of the upper part will be in a great degree maintained by the thickness of the walls. And thus this rigidity of the uterus itself—as it may be termed—unquestionably constitutes a very powerful hindrance to displacements of the fundus uteri. Subsidiary to those hindrances already mentioned must be added the general connection of the uterus with the adjacent viscera by means of blood-vessels and cellular tissue surrounding the blood-vessels, also the peritoneum. But it cannot fail to be observed that these subsidiary means of attachment of the uterus apply, for the most part, to the lower part of the organ, and they do not, except indirectly, help to fix the upper part of the uterus. The Fallopian tubes aid very little in preventing anterior or posterior motion.

This very delicate adjustment of the uterus in its position in the pelvis—for it is a very delicate adjustment—is a physiological necessity. It would be impossible otherwise for the uterus to expand, and it would be impossible for it to undergo those changes of position which are involved in the existence and course of pregnancy, were it not for the fact that the attachments of the uterus are such as now described. It is the upper part which undergoes this expansion in pregnancy in order to fit it to become the residence of the fœtus, and this part is left comparatively free. But for the physiological necessities involved in the propagation of the species, the uterus would doubtless have been fixed much more firmly and with less liability to these alterations of shape and position.

We now come to consider the *causes* of flexion of the uterus. If we wish to trace the pathology of any disease, we search out its beginning; we endeavour to ascertain the point at which the healthy action passed into one unhealthy or diseased. When the disease is far advanced, it is often very difficult to determine its real etiology and pathology. Various complications have been by that time added, and various secondary effects, which mask the primary one. For this reason I just now directed attention to the shape and position of the uterus, and the methods by which it is sustained therein. A slight failure in any one of these conditions of equilibrium is really the beginning of a flexion.

We may usefully divide the causes of flexion into two—the predisposing and the exciting causes.

One of the most important of the predisposing causes is *an unhealthy state of the body generally*; another is *a previous pregnancy*. These are the most important predisposing causes of flexion of the uterus; and concerning each some observations are required. The tissues of the body, imperfectly or badly nourished, are relaxed and wanting in tonicity. The circulation in the blood-vessels is retarded under these circumstances—it is sluggish and imperfect; and the tissue-changes take place with greater slowness than under ordinary circumstances and in a state of health. The effect of this state of things upon the uterus is most marked: it increases in size; its circulation becomes slow; and, as a necessary mechanical result of this, there occurs a diminution in the rigidity of the uterus itself—one of the most important agents, as I have endeavoured to show, in preserving the uterus intact. In other words, the uterus becomes pliable to an unusual degree. This is a state of things which constitutes a very strong

predisposition to a change of shape in the uterus. In what class of individuals do we observe such a condition as this? In young women who are growing very fast, in whom the vital processes ought to be exceedingly active, at the age of twelve to fifteen or eighteen; who are badly fed, surrounded by hygienic circumstances of a deteriorating character, especially so when confined in close apartments and workrooms. These are the conditions of life which predispose to this want of rigidity of the uterus.

The other predisposing cause which I have to allude to is *pregnancy*. If the uterus has undergone the expansion and enlargement inseparable from pregnancy, there is thus constituted a predisposition to flexion, and the predisposition is created in the following manner:—After pregnancy is over and the uterus vacated, it is some time before the organ returns to its normal dimensions. In fact, it does not return to the dimensions which existed before. In round numbers, the increased size would be represented by one-fourth in the healthy uterus after normal gestation and its effects have properly come to an end.

Again, the quickness and rapidity with which the uterus becomes reduced in size after pregnancy is very various. In some cases the uterus is exceedingly slow in returning to its normal dimensions. If the process goes on healthily, the uterus speedily returns to its proper size—probably within a month; but in other cases it is a considerable number of months before the uterus is found of its normal size. This involution of the uterus, as it is termed, goes on in this inactive manner in a very considerable number of instances; but even when it goes on to the full extent and with the usual quickness, the uterus is still left larger than it was before. And it must not be forgotten that the increased size affects not so much the cervix as the body of the uterus, which, as already stated, is, from its want of attachment, more predisposed to a change of position. These constitute the predisposing causes of flexion. There are several others, but these are the two main ones.

Next we come to exciting causes. The exciting cause is sometimes simply an exaggeration of the predisposing ones. For instance, an ill-nourished woman becomes pregnant. There we have the two classes of predisposing causes in operation together. Here the uterus is a long time in returning to its proper size after the labour is over; the patient very soon falls pregnant again, and perhaps a third or fourth time. Thus the uterus has very little rest: it has scarcely time to recover the effect of one

pregnancy before another pregnancy follows. The result is that, in following her ordinary avocations, the uterus in such a patient gradually gives way. The upper part of it, that is to say, comes to assume a position which is partly one of flexion; and when the flexion has once arrived at that point, the patient has generally no more children. She is liable to miscarriage; and if she conceives, that conception is followed by miscarriage. Most frequently she does not conceive, and the uterus is left in this flexed condition; and if it attracts no attention, it remains so and never gets cured. Such a case exhibits the fact that constant action of predisposing causes leads to the disease by itself, the predisposing causes acting by themselves; the two together amount to an exciting cause. The other exciting causes to be mentioned are of a more positive and direct character. One important exciting cause is an accidental strain or fall, such as in the following case:—A lady standing at her door is about to step into a carriage; the servant is sent to fetch something; she stands by the horse's head; the horse suddenly takes fright and starts forward; the lady holds on by the rein, and is dragged some yards. She undergoes great exertion there and then, and the result is that the uterus is forced downwards and backwards, and retroflexion of the organ is instantly originated. Take another instance:—A young lady, previously in a state of good health, but unused to much exertion, goes to a ball, and, not accustomed to dancing, dances for a long time together—for five or six hours. She feels rather ill; and, to add to this, the following morning, on coming down stairs, she slips and falls on her back, passing over four or five steps, and receiving a violent jerk. She experiences intense pain; and it is found on examination a few days afterwards that the uterus is acutely anteflexed. Another instance:—A lady, four days after parturition, in the absence of her nurse, rises from her bed, and walks across the room. She experiences a sudden severe pain, and returns to her bed. She makes light of it at first; but a few months afterwards, after undergoing a course of continuous discomfort, it is found that she is suffering from retroflexion of the uterus, which originated doubtless in the incautious exertion mentioned.

Instances *ad infinitum* might be mentioned in which it was demonstrable that the starting-point of the flexion was an accident. Another exciting cause of flexion of the uterus is the position of the body. It is quite certain that remaining in a constrained position daily for a great number of hours has a very

important influence in the production of one of the forms of flexion of the uterus. I mean anteflexion. In the case of young women, employed in dressmaking establishments, and following their occupations for many hours during the day, without any opportunity of taking exercise, combined not seldom with bad living, there are thus brought into play the predisposing causes also. It is not at all rare to find, under such circumstances, that the uterus becomes anteflexed. The use of sewing machines I have observed to be followed by the same result. This is due to the position of the body. A word more in reference to pregnancy as a cause. We frequently find in practice that patients attach extreme importance as regards the commencement of their maladies to their confinements, suspecting the illness to be due to some peculiarity in the confinement itself. As will be more particularly shown in the chapter on 'Prolapsus,' destruction of the normal support given by the perineum, such as sometimes occurs in the act of labour, is often the starting point of prolapsus and flexion; but flexion may originate without injury of the perineum.

How, it may be asked, does the fundus of the uterus descend forwards or backwards, as the case may be? It descends in consequence of the pressure from above when a sudden or forcible exertion involves putting the abdominal muscles into a state of rigidity. The viscera of the abdomen receive the pressure, and that which offers the least resistance, of course, will give way. It is a matter of accident whether the fundus moves forwards or backwards. That is determined by other conditions.

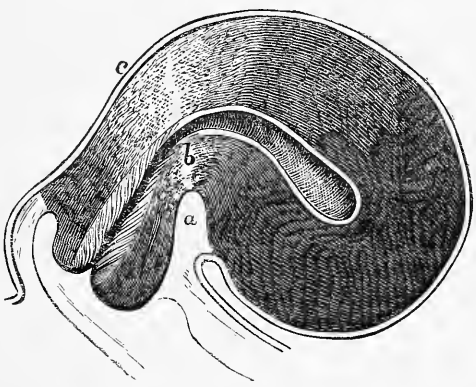
We pass now to the study of the *varieties* of flexion of the uterus. Supported as the uterus is at each side, lateral flexion is very rare. The uterus is generally either bent forwards or backwards, constituting in one case anteflexion, in the other retroflexion. With reference to the comparative frequency of these two events, the following is, I believe, the truth on the subject. Anteflexion of the uterus is more common than retroflexion, and in the proportion of about three to two; but severe anteflexion is more rare than severe retroflexion. A consideration of the attachments of the uterus gives the clue to this. Fig. 33 represents the normal shape of the uterus, and the position of the bladder. It is seen that the peritoneal pouch behind the uterus (*c*) is much deeper than that in front of it (*a*). There is, in fact, less support for the uterus behind than there is in front. When the fundus gets bent backwards, it will be seen that there is more room for

it, and that it can descend further posteriorly than anteriorly. The pouch behind is much the deeper. In front there can hardly be said to be a pouch. That is why the flexion in retroflexion is often more acute than in cases of anteflexion.

The relation subsisting between 'version' and 'flexion' requires a word of explanation. In point of fact, version very rarely occurs without some degree of flexion, nor does flexion usually occur without some degree of version. Simple retroversion, with no actual curving of the uterine canal, I do not know that I have ever witnessed, but I have seen one or two cases of very complete simple anteversion in cases of forward inclination of the uterus.

I propose in the next place to call attention to some of the *pathological effects* of flexions of the uterus. Fig. 33 represents the comparative thickness of the walls of the uterus, as shown by a section through it transversely and from before backwards. What would be the effect upon the uterus of a bending of the organ. It would obviously be to produce a compression of the tissues of the organ at the seat of the bend. Such compression is in the nature of things inevitable. The distance between the external and the

Fig. 34.



internal wall will be diminished. The diminution of the thickness of the walls of the uterus will take place to a greater extent on the concave side of the bend. There will be a diminution of the diameter at the position of the flexion (*a*, *b*, *c*), and the general result will be that there is a compressing force exercised at the middle of the uterus upon the tissues of the organ (see fig. 34). The effects of this compression in retarding the circulation

in the uterus, and in producing acute *congestion* of the organ, have already been discussed at p. 34, in considering the subject of congestion of the uterus. Its effects in producing 'strangulation' of the uterus have been also described in the same place. It is, I believe, an inevitable result that the circulation in the upper part of the uterus should be in a considerable degree interfered with when compression is thus exercised upon the uterus and its vessels, the result being that the upper part of the uterus comes in the end to contain a larger portion of blood than usual. It becomes unduly heavy and larger. It becomes not only congested, but likewise unduly sensitive, to an extraordinary degree in some cases; and the congestion and undue sensitiveness constitute the most important of the phenomena, to a less degree in anteflexion than in retroflexion, but even in the former cases to a marked degree in many instances. This compression in the middle of the uterus has various effects in different cases. After a time, if the flexion is not very acute in degree, the uterus may become habituated to it, and flexion becomes after a certain interval less embarrassing to the uterus. The uterus acquires a certain toleration of this condition. But when it does not acquire that toleration, or when, as frequently happens, the malady increases, we have an opportunity of witnessing the following effects; the fundus uteri is found sensitive, swollen, and tender to a degree; the patient is in a state of discomfort which hardly any physical condition of other organs of the body can exceed. The compression of the uterus is a phenomenon to which I attach great importance as a feature in the natural history of these cases. Various writers on this subject take views on the matter which differ considerably from those which are here set forth. It is held, for instance, that this congestion, or so-called inflammation, of the upper part of the uterus is not the only primary evil, but the cause of the pain in these cases of flexion; while the flexion itself is of secondary consequence. I must say that my experience has led me to take a very opposite view. The inflammation or congestion of the upper part of the uterus is generally considerable. It is only so far primary in the degree and in the manner I have already pointed out in speaking of predisposing causes of flexion. Thus a congestion of the upper part of the uterus, which we may suppose to exist primarily, may, in the first instance, produce flexion. Having done that, the flexion will react upon the congestion, and will increase it; and, unless cured, it will prevent the cure of that congestion. I do not at all deny the importance

of this element of fulness of the bloodvessels of the upper part of the uterus—very far indeed from that; but the relation which exists between the two things is, I believe, the one above set forth.

The next effect to be mentioned is *hypertrophy of the uterus*, general enlargement of the organ, the result of long-continued congestion of the part, producing, in some instances, a quasi-inflammatory condition, leading to the deposition of material in the interstices of the organ, and having the result of increasing its size. In the chapter on the general Pathology of the Uterus, this subject has been partly dealt with (see p. 36). The uterus is an organ which exhibits the tendency to hypertrophy in a remarkable degree: the effect of a long-continued congestion of the uterus is to produce *hypertrophy* of those portions which are in a congested condition. This applies not only to the fundus of the uterus itself, but to the parts round the os uteri, where, in fact, the effects are so considerable as to have had the effect, in past years, of attracting a too exclusive attention to this part of the organ. It is not uncommon to find that the lips of the os uteri are very much thickened, that it is very much larger than usual, and that the thickness of the walls of the cervix uteri have increased to double the usual size. In fact, there is a considerable hypertrophy of the whole uterus present under these circumstances, not only of the cervix, but also of the body of the uterus. In connection with the subject of hypertrophy of the uterus, it is necessary to consider the influence of defective involution of the uterus after delivery, in cases where the patient has had children. The influence of this defective involution is often prolonged. When we have the two things associated together—defective involution and flexion, these two circumstances co-operating—it is precisely under such circumstances that we meet with a marked state of hypertrophy of the organ. Flexion alone is sufficient, but, when co-operating with defective involution of the organ, the hypertrophy is most marked. Further, associated with this hypertrophy of the cervix of the uterus, we generally meet with the following conditions:—A very great increase of secretion from the cervical and other glands, and other changes in the mucous membrane which were formerly considered to be ulcerative in character.

Another effect of flexion, rather common, is a *descent of the uterus*. This is one of the most important effects, clinically, which have to be mentioned. This is the commencement, the

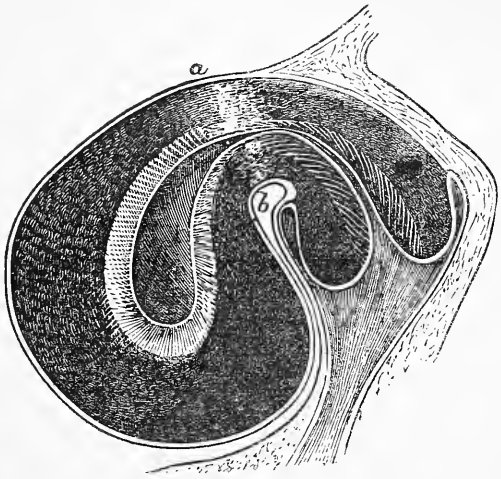
starting-point, in many cases, of prolapsus of the uterus. It is the first step in the process in a considerable number of cases. When the uterus is flexed, it becomes from that moment a source of irritation to the patient: the patient has difficulty in evacuating the contents of the rectum, and the functions of the bladder are interfered with, though in a somewhat different manner; the general result is, that the patient has frequently to use straining efforts either at stool or in micturition. The effect of this straining is to propel the uterus downwards in the pelvis, and when this process has been going on for weeks and for months, or for years, the result is eventually that the uterus, as a whole, comes to occupy a position in the pelvis which is much lower than it should have. In making an examination, we find the os uteri quite close to the vaginal aperture in many instances; or, if we do not find it there, we find it dislocated in a corresponding manner backwards, and very low down. I believe this is the mechanism of the first stage of prolapsus of the uterus in nine cases out of ten.

The mechanical results observed are very interesting, and will be more particularly described in the chapter on 'Prolapsus.'

Contraction of the Cervical Canal, leading to the interior of the uterus, is another very important effect of flexion. It is, I need hardly state, necessary that this canal should be in a patent condition, in order that menstruation may occur easily, and in order that impregnation may take place. Contraction of the cervical canal, which is one of the common causes of dysmenorrhœa and of sterility, is a direct and necessary effect of flexion of the uterus. Other conditions may produce contraction of the canal, but the percentage of cases of contraction due to other causes is not more than from one to three or four per cent.—I should say, not more than one per cent. The mechanism of contractions due to flexion is obvious. If we take an ordinary-sized jargonelle pear, and scoop a little passage into its middle about an eighth of an inch in diameter, beginning at the insertion of the stem, that will give a tolerably exact representation of the size of the canal, at the place where it opens into the uterus proper. At this point, which is the internal os uteri, the canal has a diameter, under ordinary circumstances, of one-eighth of an inch; the canal is larger below that point. But as the strength of a chain is that of its weakest link, so the size of a canal is that of its smallest portion, when we come to consider how far it is available for the passage of fluid. Regarding the thickness of

the walls, the very great thickness in proportion to the size of the cervical canal, it may be conceived what must happen when that organ is bent at an acute angle. One result only is possible, that very considerable contraction of the canal will occur (see figs. 34

Fig. 35.*



and 35). This is the explanation of dysmenorrhœa, and the reason why it occurs so frequently in cases of flexion. This contraction of the cervical canal is an inevitable effect of flexion. It occurs, with more or less completeness, in every case. In cases where the flexion takes place very gradually, where it has been advancing slowly over a period of many years, the contraction may be less obvious, owing to the gradual arching of the canal, but when the flexion is produced suddenly and acutely, the contraction is often very decided.

The canal is virtually contracted because the opposite walls of the canal are brought so closely in contact by the flexion which occurs at this situation, and because the thickness and firmness of the uterine walls at the point in question are so considerable. If we straighten the uterus, menstruation becomes forthwith easy, the canal is made straight, and a passage for fluid is at once easily obtained. The subject of dysmenorrhœa will be considered further in a separate chapter.

* Fig. 35 represents a case of long-standing retroflexion of the uterus.

Another effect of flexion is *disturbance of the menstrual functions*. We have already considered how contraction of the canal produces dysmenorrhœa, which is one of these disturbances, it being generally the state of the canal which makes menstruation difficult.

Menorrhagia, another disorder of menstruation, is frequently due to flexion. How is it that flexion of the uterus so frequently gives rise to menorrhagia, for such is undoubtedly the case? When the blood cannot escape readily from the interior of the uterus, the body of the uterus becomes distended. This distension increases in process of time, and the cavity of the uterus itself becomes enlarged. The result is that the surface is very much increased, and so the uterus secretes a larger quantity of blood than usual, the blood very frequently coming away in gushes (see chapter on Menorrhagia). Flexion of the uterus is responsible for many cases of *amenorrhœa*. The circulation of the uterus must be free from embarrassment, in order that menstruation may occur normally: that seems to be an essential condition. If the circulation of the uterus is disturbed, the function of menstruation is liable to be deranged, and it is thus flexion so frequently produces a disturbance of menstruation. The mucous membrane is thus not so well supplied with blood as usual, and, *a priori*, we should expect an important influence to be produced in this way on menstruation by the presence of flexion. The cases given in detail in a subsequent chapter offer many instances of the occurrence here alluded to.

The facts I have observed enable me to deduce the generalisation that the flexion of the uterus may produce an entire suspension and cessation of menstruation, long before this important function should cease. It will not unfrequently be found in these cases that the first symptom which the patient exhibits will be dysmenorrhœa—an impediment to the escape of blood; then, in some cases, menorrhagia shows itself, and, finally, there is an absence of any discharge at all.

Sterility is another effect. Much which would have to be said on this subject has been anticipated in speaking of dysmenorrhœa and contraction of the cervical canal. In many cases of flexion intercourse itself is attended with great difficulty, inasmuch as the act is productive of great pain to the patient, and it is avoided as much as possible. This of itself has an influence in producing sterility. Many patients with flexion become pregnant, but a very large number do not. Flexion will lead to

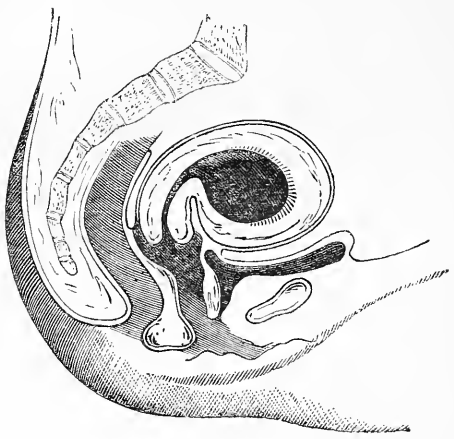
sterility in other ways also, by keeping up an unhealthy condition of the uterus; this is important. If menstruation is very profuse, or if it be very scanty, or when, following the menstruation, there occurs retention in the cavity of the uterus, impregnation is almost impossible under these circumstances. Exact statistics of sterility in association with anteflexion and retroflexion will be given a few pages later on.

Abortions.—Flexions are responsible for a very large proportion of the *miscarriages* which occur; when we hear of a patient having a considerable number of miscarriages, one after another in succession, it may be almost taken for granted that that patient is suffering from flexion. This is a statement which can easily be verified. Syphilis is responsible for a considerable number of abortions, but putting this disease on one side, the most frequent cause of abortion is flexion. Thus the same circumstances which so frequently induce sterility are liable to produce abortion if the patient does become pregnant. Anteflexion is the most common cause of abortion. Retroflexion is not so commonly the cause of abortion, not because it is not quite so powerful to produce abortion, but because in retroflexion impregnation much more rarely occurs. Anteflexion of the uterus more frequently allows of impregnation than retroflexion. This is another way of putting the same thing. Anteflexion of the uterus leads to miscarriage generally in the following manner: the uterus remains confined in the pelvis, and during all this time the growth of the ovum is, to an extent, interfered with, and miscarriage results. Shortly afterwards possibly the patient falls pregnant again before the uterus has regained its proper shape. And this may be observed to go on in some cases four, five, or six times in succession. The proof that this condition is the cause of the miscarriage is that the restoration of the fundus uteri to its proper position will prevent further miscarriages, and if the circumstances of the case allow of this being done, the succeeding pregnancy will proceed naturally. More precise statistics on the subject here spoken of will be found a few pages later on.

Another result connected with abortion is the *retention of the ovum in the uterus* after its death. For instance, a patient has a miscarriage due to anteflexion. The ovum dies and the patient loses a great quantity of blood. (See fig. 36.) In a certain number of these cases the ovum will remain in the uterus a considerable number of days, and the reason it does not come away

is by reason of the shape of the canal. In point of fact it has to pass round a circuitous course, and, unless properly assisted, there occurs a considerable delay in its escape from the uterus. The

Fig. 36.*



difficulty results from the acutely flexed state of the organ, and the knowledge of this fact is the secret of success in the treatment of such cases of retention of the ovum. In these cases of miscarriage, if the ovum is retained, a further frequent result is that it becomes putrid, and gives rise to an offensive discharge which may continue for some time. When, however, the uterus is artificially straightened, the ovum is generally easily evacuated, and the offensive discharge ceases. So, in cases of retroflexion, there is a great liability to retention of the ovum, and the mechanism of the retention is the same as in the former case. With reference to the importance of this relation between retention of the ovum in early miscarriages and flexions, I do not hesitate to say that, in not one single instance during the last three or four years since my attention has been directed to the mechanism of these occurrences, have I seen a case in which the relation described has not been most obvious. The difficulty in relieving the patient, and putting an end to her various discomforts, has almost entirely ceased on taking measures to straighten the canal, and thus allow-

* Fig. 36 represents the condition of the uterus when distended by a retained ovum or clots in a case of anteflexion.

ing the uterus to exert advantageously the proper expulsive action on its contents.

Pains and Discomforts produced by the presence of Flexions of the Uterus.—The presence of pains in the lower part of the abdomen, referable in any way to the generative organs, are, in a very large proportion of cases, indications of the existence of flexion of the uterus. It appears that, as regards its position, the pain which is experienced varies considerably. It varies also according to the nature of the flexion. As a rule, the presence of anteflexion is indicated by one kind of pain, and the presence of retroflexion by another kind of pain. But these are rules which are open to exception. Most commonly the pain which the patient experiences is felt in the back, in the sacral region. Another frequent position for pain is in one of the groins, just above Poupart's ligament, on one or the other side. It is sometimes felt in the region of the uterus itself, but this is not so common. It is rather common for it to be experienced down the back of the legs, down the back of the thighs, on one side or the other. With retroflexion the pain most commonly occurs in the back, with anteflexion most commonly it occurs in the inguinal regions; in different cases, however, we find very remarkable variations in these rules. Some four years ago I was requested to see a young lady who had been affected with pains in one spot in the abdomen, just on a level with the umbilicus, and on the left side of it; she informed me that she had not been without that pain for a period of five or six months, and she had, previously to this time, for some years experienced other pains and serious discomforts. But the particular circumstance to which she called my attention, and the circumstance which had also attracted the attention of the practitioners who treated her, was this pain in the abdominal region, in the position indicated. No tumour could be discovered in the abdomen, nor was there any apparent cause for this pain. But, on investigating the condition of the uterus, it was found that the patient was the subject of acute retroflexion. The case was additionally interesting from the fact that after the introduction of the sound into the uterus, and turning the uterus into its proper position, there was no return of the pain whatever. Further treatment was necessary to rectify the state of the uterus; but, as regards this particular pain, which was a source of so much annoyance to the patient, it is a fact that after the first use of the sound the pain in question went entirely away. Another case, likewise an exceptional one, and equally interesting from this

point of view, was that of a lady who had had one child about five years previous to the time of my seeing her. She had been unable to walk about or to follow her ordinary avocations since the labour; but the inconvenience of which she chiefly complained was a pain on the right side of the abdomen, on a level with the umbilicus, and, in fact, in a corresponding position to the pain present in the first case mentioned. This patient was found on investigation to have acute retroflexion of the uterus. I mention these exceptional cases, because they illustrate the fact that the pain which is produced by flexion of the uterus is not always in the same position. More generally, in 90 per cent. of cases, the rule holds good that the pain is located in the back in cases of retroflexion, and in the inguinal regions in cases of anteflexion. Pain may be spontaneous, or produced only by motion. As a rule, patients do not complain of pains, in cases of flexion, so long as they remain quiet. If they remain in bed, or are content to lie on the sofa, there is usually but little pain. But any degree of motion is sufficient, or may be sufficient, to bring on pain, and the pain which is thus brought on may be either severe in degree, or comparatively trifling; in many instances the discomfort which is produced can hardly be said to amount to pain. The patient informs us that she is unable to stand for more than two or three minutes at a time, when she is obliged to sit down. Such patients cannot even bear to be kept waiting at the door while the bell is being answered. Other patients find that walking a short distance brings on so much pain that they are obliged to restrict themselves in walking exercise. In extreme degrees we find that the act of walking at all produces so much discomfort that exercise is impossible. It is a remarkable feature that in all these cases motion produces pain; and, as regards the kind of motion which produces pain, we find that it is precisely those kinds of motion which might be expected to increase the already existing flexion which give an intensity to the pain. Such, for instance, as stooping down to pick up any object from the floor, sitting for a long time on a straight-backed chair, leaning forwards, reaching upwards to take a dress from a clothes peg, going upstairs, &c. These are generalities in respect to the pains of which the patient complains.

Disturbance of the functions of the Bladder.—One of the most common events in cases of anteflexion is, that the patient experiences such a constant or frequent desire to empty the bladder, that her life is a misery to her. I have known cases in which

this has occurred as often as every five or ten minutes in cases of anteflexion. In cases of retroflexion, the effect upon the functions of the bladder is less marked; in some such cases we meet with retention of the urine to a marked degree. Then, in regard to the rectum, the function of defæcation is often interfered with in various ways, the patient finding often a difficulty in evacuating the contents of the rectum, in consequence of the pressure of the uterus upon it. The pressure of the uterus acts in a kind of valvular manner, and, the more the patient strains, the more complete is the closure. In other cases, defæcation is attended with considerable pain. The most aggravated cases, and they are not very commonly met with, are those in which there is retroflexion, accompanied by rectocele. The perineum is partly destroyed, and the rectum obtrudes a little through the vaginal aperture. The uterus is retroflexed, and presses down the rectum, and it thus obstructs the canal; a state of things may then arise which produces intolerable anguish to the patient. The rectum may become ulcerated. At the part where the rectum projects into the vagina there is a bend, and in this position ulcers are liable to form. This is an extreme case, but the right explanation of such a case is of some moment. Retroflexion may thus, sometimes, produce what appears to be a serious disease of the rectum. In some cases, anteversion leads to very serious interference with defæcation.

Impairment of power of locomotion.—Some three years ago* I made this the subject of a clinical lecture, under the title of 'Uterine Lameness.' The object being to point out that, in certain cases of difficult locomotion, the existence of chronic flexion of the uterus was the cause of that difficulty. Thus we meet with cases of the following character:—A slight attempt at walking is attended with such pain, and such inconvenience that the patient is practically unable to walk, and, in extreme cases, the patient may be absolutely confined to the sofa; pain may or may not be present when the patient is at rest. It is not that these patients cannot walk, because, if a fire were to occur in the house, or something which would produce a sudden call on the locomotive powers, walking would be possible. But the act of walking is attended with so much pain and discomfort, that the patient does not take exercise. This affection must not, of course, be confounded with paralysis connected with some obvious and recognisable affection of the nervous centres. These are not

* *Brit. Med. Journ.*, Nov. 21, 1868.

cases of paraplegia, and they differ from them in essential particulars. Dr. Priestley has pointed out, that actual paraplegia may be observed in cases of chronic retroflexion. This must be regarded as an advanced condition and implies probably reflex paralysis, or it may possibly originate in long-continued disease of the lower extremities, without any real disease of the nervous centres. The impairment of locomotion, to which I give the name uterine lameness, may be seen in cases where the uterus is flexed forwards, or in cases where it is flexed backwards, but the most marked cases are those in which the uterus is flexed backwards. It is most *extreme* in cases where there is retroflexion, but we most *commonly* see it in cases of anteflexion. Many patients suffering from flexions of the uterus move about with a certain degree of freedom, but it is rare that locomotion is not restricted in some degree, and the impairment of locomotion is so common a feature in cases of chronic flexion, that it is highly desirable to recognise its importance by a suitable designation, such as 'uterine lameness.'

Pain on Intercourse.—This is a symptom and effect of the presence of flexions of the uterus, which is very commonly present and deserves attention. There are of course other conditions of the generative organs capable of giving rise to the symptom in question, but, certainly, flexions of the organ are most common causes.

Nervous disturbances due to the existence of Flexions.—Under this heading there is very much to be said. The 'nervous' relations of disorders of the uterus have at all times been matter for discussion, and wide differences of opinion have been entertained on the subject. According to my belief, flexions of the uterus play a most important part, in giving rise to, and in perpetuating various nervous disturbances and disorders. In a separate chapter, the various important questions arising out of a consideration of this subject will be set forth. The 'irritable uterus,' 'hysteria,' 'nausea and vomiting,' &c., will be included in this important category.

CHAPTER IX.

FLEXIONS OF THE UTERUS, CONTINUED.—RETROFLEXION AND ANTEVERSION OF THE UTERUS SEPARATELY CONSIDERED.

RETROFLEXION and RETROVERSION.—Frequency compared with Anteflexion—Causes—Varieties—Complications—Diagnosis and Symptoms.

ANTEFLEXION and ANTEVERSION.—Frequency—Varieties—Complications—Diagnosis and Symptoms—Nausea and Vomiting.

RETROFLEXION AND RETROVERSION.

Frequency of Retroflexion and Retroversion.—Judging from the results given in the Table in Chapter I., and judging also from the results of private practice, flexions of the uterus backward are not so frequent as flexions forward in the proportion of 112 to 184. Retroversion alone is very uncommon, and I hardly recollect to have seen a well-marked case, flexion being to a greater or less degree almost inevitably associated with it.

Causes of Retroflexion.—The general question as to the causes of flexions have been already fully considered in discussing the pathology and effects of congestion of the uterus (see p. 32), and in considering flexions as a whole (see p. 191). We have now to deal with the special causes, if there be such, of retroflexion. I can draw no absolute conclusion from what I have observed as to the effect of particular accidents or special antecedents producing a flexion of the uterus backwards instead of forwards, for I have known the same kind of accident produce different results in this respect.

Varieties of Retroflexion.—These are very numerous. According to :—

a. The degree of the flexion, which may be *slight*, or *well-marked.*

b. The duration of the disease, which may, therefore, be *acute* or *chronic.*

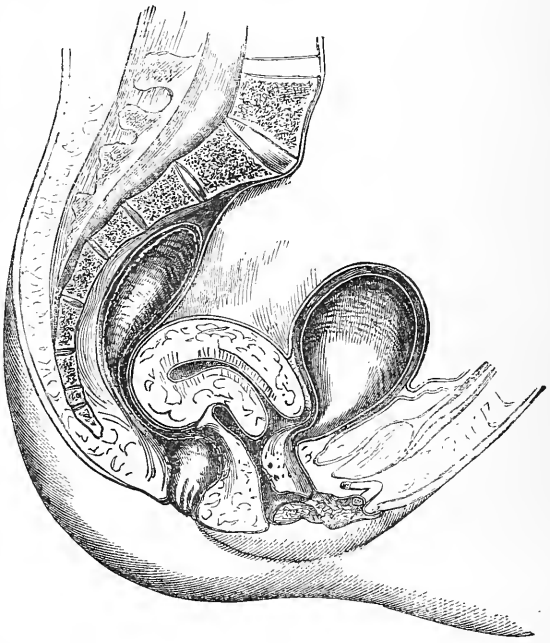
c. The severity of the symptoms.

d. The complications, e.g. prolapsus, disease of the rectum

(rectocele, &c.), enlargement of the uterus, tumours of the uterus, &c.

The circumstance which weighs most with the patient is the degree of suffering present, the degree in which the disorder present prevents her going about, or following her ordinary avocations. It has been argued because some few women are found to have a flexion of the uterus without suffering therefrom, that therefore flexions are unimportant. The argument requires to be dealt with. It must be admitted, to begin with, that some women are more sensitive to pain than others, or, at all events, that the same amount of distortion of the uterus will not produce the same amount of suffering in all cases. Thus I have met with some few instances of retroflexion when the symptoms were comparatively slight. Once or twice I have come upon it accidentally, so to

Fig. 37.*



speak, the symptoms not leading up to it; but these are most unquestionably exceptional cases.

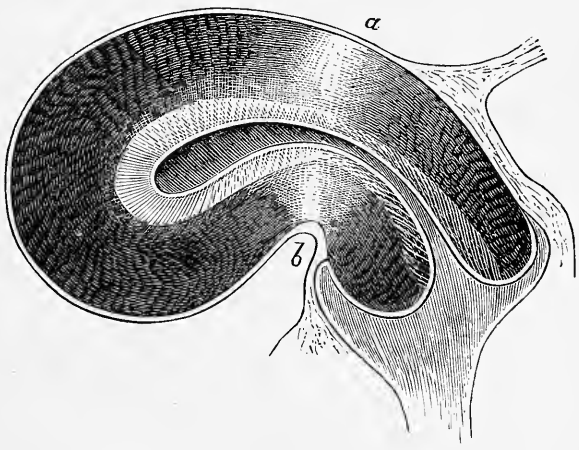
The fact is, the disease presents itself in numerous forms, and in the future it is quite certain that each one of these will obtain a definite place in scientific language.

* Fig. 37 represents a rather large uterus retroflexed—an average kind of case.

Retroflexion does not as a rule stop at an intermediate stage. Having begun, it either becomes cured or becomes worse. If it become suddenly intensified, the suffering produced is of the direst and most severe kind; but if the descent of the fundus downwards is more gradual, as is the case when the patient does not take much exercise, the suffering may not be sufficiently great to attract very much attention, until perhaps after feeling something a little wrong for a year or so, advice is at last sought, and a thoroughly established retroflexion of the uterus is discovered.

The actual acuteness of the bend in the uterus appears to influence the result in regard to suffering. Thus if the organ become rather suddenly and sharply bent on itself the suffering is of the acutest character, whereas if the curve is a more gradual one (accompanied as this is with *version*), the disturbance in the circulation of the organ is less, the pressure on nerves is less, and the symptoms are less marked. In very chronic cases we sometimes find that the uterus has become acutely bent in consequence of the progressive atrophy of the uterine wall on the concave side of the flexion. A line representing the cavity of the

Fig. 38.

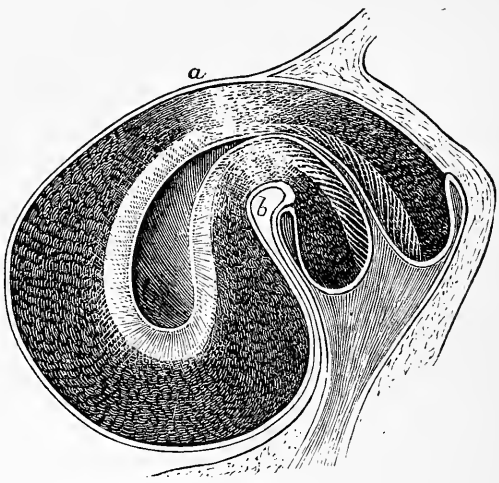


uterus would in a well-marked case be of a parabolic outline; in a less marked case the line would be a segment of a circle, larger or smaller in different cases. Thus in a very acute case the fundus uteri would be close to the posterior part of the cervix,

the organ being nearly completely doubled on itself. But in a less marked case the interval between the fundus and the os uteri would be greater.

The thickness of the uterine wall at the seat of the flexion varies much. In a recent case the thickness is only a little less than usual, say one-eighth of an inch on the concave side of the bend; but in a chronic case the thickness may be reduced until

Fig. 39.



the uterine wall at this point is only one-eighth of an inch thick altogether. The stability of the organ is then destroyed, for if its shape be rectified there is no rigidity to assist in maintaining it. The two drawings (figs. 38 and 39) have been carefully prepared in conformity with clinical observation, to show the alteration in the walls and in the shape of the uterus: in the one case is shown what may be termed confirmed retroflexion of not very long duration—a few months only. In the other is represented the atrophy and thinning of the wall in a case of many (eight or ten) years' duration.

Atrophy is not necessarily great in degree in direct proportion to the duration of the disease, for the flexion may not, although confirmed, have ever been very acute.

The congestion of the uterus accompanying the flexion varies much in different cases, but a mechanical explanation for this variation is generally present. The greatest congestion is gene-

rally present in the first stage in acute degrees of flexion. Later on the congestion may in process of years become diminished. The enlargement of the uterus proportionately varies. Another reason for variation in the size of the uterus is connected with the condition of the organ in regard to *involution* after delivery. Thus when the retroflexion follows quickly on a labour the uterus will be found large, but in two or three months' time the size will have been much reduced. Hypertrophy of the cervix uteri is very generally present in chronic retroflexion, the hypertrophy being sometimes such that the lips of the os uteri are four or six times their proper dimension.

The complication with rupture of the perineum is very important. Destruction of the perineum in labour appears to be often the first step in the production of retroflexion, and it is very certain that the flexion is more likely to become acute in degree in such cases, added to which the liability to a complete descent of the organ in its retroflexed state through the vulva is a further contingency. (See chapter on Prolapsus.)

Complications of other kinds are: fibroid tumours growing at the back of the uterus in such a position as to pull the fundus backwards. These are rare. Another is adhesion of the fundus to the peritoneal pouch, into which it has been thus unnaturally projected. This adhesion does not, I believe, very commonly occur; but it would obviously interfere with rectification of the shape of the organ.

Regarding other changes in the uterus itself the facts I have observed lead me to the conclusion that the very high and indeed extraordinary degree of sensitiveness present in some few of the cases of retroflexion, those cases which have been termed 'irritable,' is dependent on constriction and compression of the nervous trunks analogous to what we see elsewhere when a nerve trunk subjected to inflammation and constricted by the contraction of the effused lymph originates a confirmed neuralgia. I have seen two or three cases of this kind where some degree of pain persisted even when the uterus was restored to its proper shape. Marvellous as is the effect of restoration of the shape of the uterus in regard to removal of pain, yet, if the disease has existed a very long time, a chronic and inveterate, though mitigated, neuralgia of the uterus may persist and survive an otherwise successful treatment in such cases.

DIAGNOSIS AND SYMPTOMS OF RETROFLEXION.

The principal remark which it occurs to me to make in reference to the *diagnosis* is, that if looked for it will be readily found. Let it be recollected that the fundus uteri is not to be reached by the finger when the uterus has a proper position and shape. But there may be retroflexion without much descent of the uterus. The disease is overlooked principally in those cases where the uterus is still high up, and where the finger has to be pressed as high as possible in the vagina before it reaches the retroflexed fundus. The cases are, however, common enough in which the disease in a most marked form has escaped recognition, simply because it has not been looked for.

The os uteri is generally too near the symphysis in these cases.

The sound is required in most cases for purposes of diagnosis. In introducing the sound, the fundus should be gently pushed upwards at the same moment that the sound is passed through the internal os. It enables us to distinguish readily between fibroid tumours growing behind the uterus and retroflexion; also to distinguish the displacement from other swellings situate at the same spot. (See p. 67 for directions as to use of sound.)

The diagnosis is much assisted in a difficult case by examination *per rectum*; the shape and outline of the tumour which is present can thus be readily defined.

The *symptoms*.—Already this part of the subject has engaged attention. The *effects* of flexions have been considered at length, and the various disturbances produced by these disorders have been pointed out.

It now remains to indicate the symptoms which are more particularly indicative of retroflexion.

The pain associated with retroflexion is generally referred to the sacral region, or the back of the upper part of the thigh on one side. I have known it, however, located obstinately in the anterior abdominal wall near the umbilicus. Chronic disease of the spine is not unfrequently supposed to exist when the sole disease present is retroflexion of the uterus. A *bearing-down sensation* is one of the most common symptoms of retroflexion.

When dysmenorrhœa is present—which is not so often the case as in anteflexion—it is apt to be very severe.

Locomotion is more decisively interfered with in cases of re-

troflexion than when the uterus is flexed forwards. The degree of incapacity in this respect is not altogether dependent on the degree of the flexion, for when the uterus has become fixed and set in its false position, the power of moving may be somewhat improved. On the other hand, an oscillating state of things, in which the uterus is so placed that it is now more, now less flexed, appears to be that which of all others gives most trouble in regard to the locomotive power. In the very severe cases of acute (in the double sense of the word) retroflexion, the slightest movement, even turning in bed, may give intense pain. With paraplegia it must not be confounded. In retroflexion the *power* of walking is present, only that its exercise may be very painful.

With reference to other symptoms which are capable of being produced by flexions generally,—*nausea* and *vomiting* are liable to be more *intense* in cases of retroflexion, though more *common* in cases of anteflexion. *Sterility*, about equally with anteflexion. *Menorrhagia* and other menstrual disturbances, *leucorrhœa* and *pain on intercourse*, about equally also with anteflexion. *Difficulty or pain in defœcation* are more peculiarly associated with retroflexion than with anteflexion. A constant desire to empty the rectum, great difficulty in doing so, passage of blood per anum, production of ulcer of the rectum, frequent diarrhœa, &c.—these are the chief methods in which the function of defæcation may be disturbed by retroflexion. I have observed each of these symptoms in different cases. In those cases where the uterus is low down, and when there is a tendency to prolapsus in addition to the retroflexion, these symptoms, referable to the rectum, exist in their greatest intensity.

That *retention of urine* may be associated with retroflexion of the gravid uterus is well known. It may be present also in retroflexion of the non-gravid uterus.

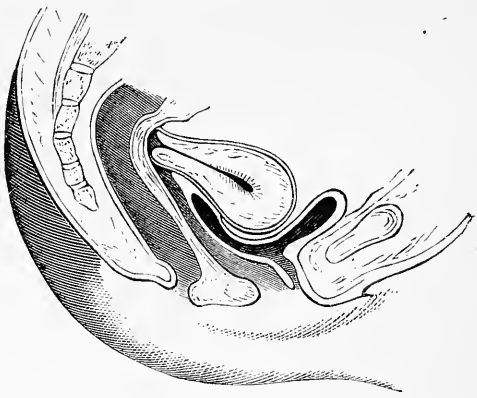
I have already discussed the question as to the occasional *absence* of symptoms (p. 208), and alluded to the fact of the symptoms occasionally but rarely persisting when the malady has been apparently successfully treated.

ANTEFLEXION AND ANTEVERSION.

Comparative frequency of Anteflexion, &c.—The affection is, in slight degrees certainly, more common than retroflexion. But acute anteflexion is probably not so common as acute retroflexion.

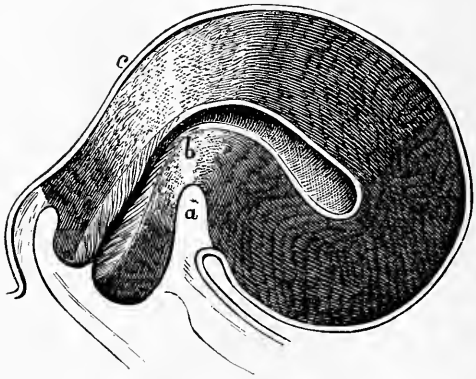
Causes.—The uterus has naturally a slight inclination forwards, which constitutes a slight predisposition to anteflexion. Too long continued *natural* exertion, such as walking, seems to me more likely to produce anteflexion than retroflexion. Sudden shocks, however, may produce either the one or the other. A perusal of the brief outlines of the cases detailed in the next chapter will convey much information as to the nature of the determining cause.

Fig. 40.



Varieties.—*Simple anteversion*, the uterus lying parallel to the vaginal roof, is very rare, but the cases are extremely severe

Fig. 41.

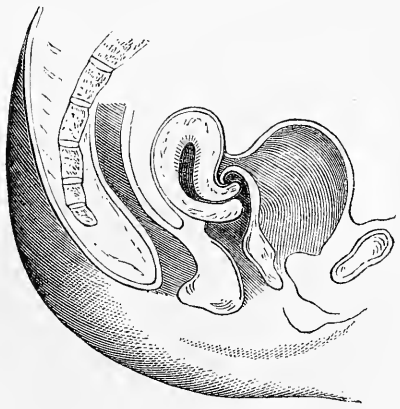


in their effects and very troublesome to cure. (Fig. 40 represents this complete anteversion.) Anteflexion, together with some

version, is generally the form observed. The seat of the flexion varies. It is generally at the junction of the cervix and body opposite the os internum, as shown in fig. 41 ; but it is not at all uncommon for the cervix to be bent lower down than this. When the flexion is low down, the os uteri is generally turned forwards, so that it looks towards the top of the symphysis pubis. The flexion may be present in all degrees of acuteness, and the uterus may have all degrees of firmness or softness in these various cases. In chronic dysmenorrhœa, due to anteflexion, the uterus is generally hard and firm, and is unbent, so as to admit the sound only by exercising some ingenuity. The uterus as a whole occupies a position which varies extremely in different cases. It is generally found that when anteflexion is present, the organ is lower than usual in the pelvis. In some cases it has become pretty firmly fixed in this low position, but in others it is in a constant state of oscillation upwards and downwards in different positions of the body, the downward movement being attended by temporary increase of the flexion.

There is one form of anteflexion deserving particular attention, as it is likely to be overlooked as such. In some few cases the uterus is not only acutely anteflexed, but it is turned backwards on its central axis. In these very peculiar cases the uterus is

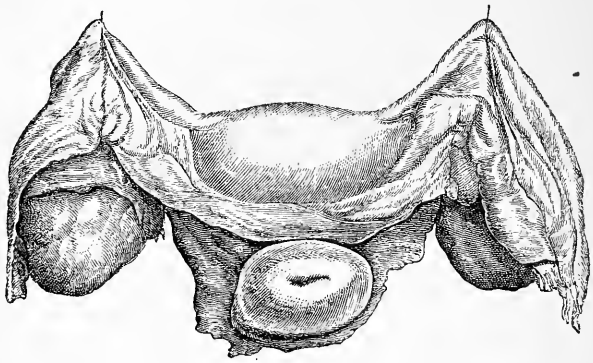
Fig. 42.



first anteflexed and then driven downwards, so that the fundus is displaced backwards. The drawing (fig. 42) shows this condition.

The os uteri looks quite upwards. Fig. 43 represents the same condition. These cases are exceedingly troublesome to deal

Fig. 43.*



with. Sterility and pain in intercourse are especially likely to be observed therewith.

Extreme sensibility of the body of the uterus to the touch is not very common in anteflexion.

Complications.—The first stage of prolapsus, and cystocele, are two of the most common complications. Fibroid tumours in the anterior wall, or a little to one side, are sometimes the cause of the anteflexion.

Lateriflexion in a well marked form is not common. It must be observed that in most cases of ordinary anteflexion the bend is generally a little to one side of the middle line.

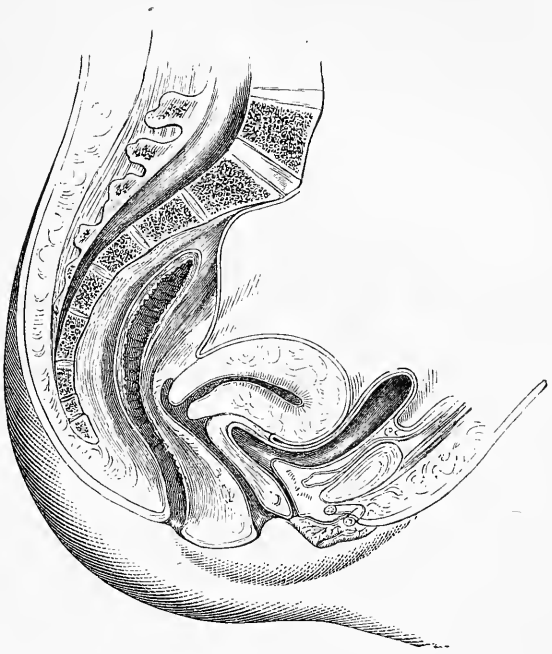
DIAGNOSIS AND SYMPTOMS.

It is sufficient to remark that the knowledge of anteflexion as a *common* affection is comparatively new, to show that the diagnosis of the condition must have had formerly too little attention paid to it. The diagnosis is easy enough, however, if ordinary skill be employed. The finger readily encounters the body of the uterus through the anterior vaginal wall (see fig. 44) when the uterus is much flexed. But if the organ be loosely fixed, the pressure drives the body of the uterus away from this

* Fig. 43, complete anteflexion, represents a specimen in University College Museum.

position, and, unless prepared for this event, the flexion may readily be overlooked. The position of the patient under ex-

Fig. 44.

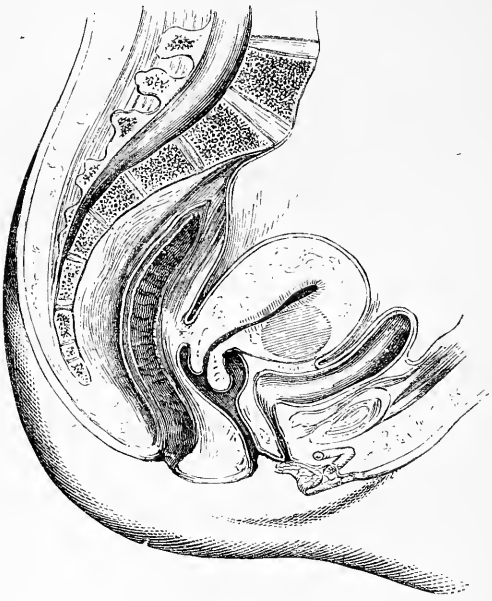


amination on the side renders this retreat of the body of the uterus easy. Examination of the patient in the supine position is still more likely to be attended with negative results. The use of the sound is of course indispensable. The older incorrect ideas as to the stricture of the cervix are largely responsible for many errors in diagnosis, it being too little known that most of these supposed strictures are due to flexion.

The hard rounded shape of the body of the uterus, felt, as above described, by the finger, may be readily confounded with a small tumour in the anterior wall. (Compare figs. 44 and 45.) Reference to the cases in the following chapter will show that six years ago I occasionally made this mistake. One of the earliest cases which gave me information as to the frequency of anteflexion was that of a lady who had been married for three years without a family, and who was suffering from menorrhagia, which appeared to be due to a tumour in the anterior uterine wall. Accordingly

I dilated the cervix with tents, with the intention of removing the tumour if possible. When the uterus was dilated, however, the

Fig. 45.*



tumour had disappeared, and the nature of the case was rendered evident. Pregnancy followed. In this case the condition of the uterus was one of acute flexion, the supposed tumour being really the anteflexed fundus uteri. The list of cases in the next chapter will present other instances of a similar character.

The diagnosis of anteflexion, when well marked, may be readily made by the touch from the rectum in cases where the hymen is intact. Other procedures for verifying or carrying the diagnosis further will be described in the chapter on Dysmenorrhœa.

Symptoms.—The general symptoms of anteflexion have been considered in pointing out the *effects* of flexions. Here those symptoms specially observed in anteflexion will be indicated.

The pains observed are more generally referred to the groins, often however to the back. The pain in locomotion is not so great in degree as in severe retroflexion as a rule. The *reflex*

* Fig. 45 represents a small fibroid tumour in anterior uterine wall.

symptoms, nausea and vomiting, and hysterical phenomena (see chapters on these subjects) are very common, but by no means universal. Sterility (see analysis of cases in following chapter) is often due to anteflexion. Dysmenorrhœa is very commonly present. Menorrhagia is often present in a severe degree, but, numerically speaking, this symptom is not so common as some others. Amenorrhœa is rather common, the function being sometimes altogether arrested by anteflexion at an early age. Leucorrhœa is very common. Retention of fluid of a leucorrhœal character, sometimes offensive, is not by any means rare in women who have had children. Miscarriages are very common. This latter fact is not yet admitted by the profession, but I am quite certain as to its correctness. Pain on intercourse is common.

CHAPTER X.

FLEXIONS OF THE UTERUS—*continued.*

Cases of Retroflexion and Retroversion.
Cases of Anteversion and Anteflexion: (*a*) In-Patient Series; (*b*) Out-Patient Series.
Remarks on the Cases of Flexion—Analysis of them in reference to the Frequency of Sterility and Abortions.

CLINICAL HISTORY OF FLEXIONS.—CASES AT UNIVERSITY COLLEGE HOSPITAL.

I NOW proceed to give in a tabular form details of 296 cases of flexion or version of the uterus observed at University College Hospital.

The cases are arranged in three categories:—

1. Cases of retroflexion or retroversion of the uterus, 112 in number.

2. Cases of anteversion or anteflexion arranged in two series according as they were treated as in-patients or as out-patients. The former series included the more severe cases. The total number of cases of anteflexion and anteversion is 184.

The more prominent incidents connected with each case are mentioned, viz., the cause of the disorder when sufficiently obvious, the condition, single or married, the number of children and miscarriages, the interval since the last child, and the condition of the uterus as ascertained by examination. The table of cases will serve to show more explicitly and categorically than could otherwise be done, the variety and importance of the symptoms, discomforts and inconveniencies produced by these alterations in the shape of the uterus.

Cases of Retroflexion and Retroversion of the Uterus.

In-Patients and Out-Patients classed together.—University College Hospital, August, 1865, *to December* 1869.—*Some other Cases of Retroflexion under head of* '*Prolapsus.*'

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
18	E. M.	M.	1	Had 1 child 3 months ago. Retroflexion and descent of uterus. 2 *ring.**
20	Mrs. C.			Retroflexion.
21	E. C.	M.	0	No pregnancy. Catamenia regular; slightly painful. Pain in back 2 months. Cannot stand easily. 3 months ago slipped down stairs on back. Laundry work. Marked retroflexion. 2 *ring.*
21	Mrs. G.	M.	1	Labour 5 months ago. Pain in defæcation. Perineum lacerated. Uterus retroflexed; very sensitive. 2 *ring.*
21	C. H.	S.	1	Child 6 months ago. Bearing-down pain, acute on walking. Severe retroflexion. 2 *ring.*
22	C. W.	S.		Pain, bearing-down. Retroflexion; much tenderness of uterus. 2 *ring.*
22	M. A. C.	M.	0	Married 5 months. Pain in back on lying down. Retroflexion. Uterus very mobile.
22	L. T.	M.	3	Last child 1½ year. Pain right side, and on walking. Leucorrhœa. Acute retroflexion. Os widely open. 3 *ring.*
23	S. P.	M.	0	Several *miscarriages.* Retroflexion.
23	F. C.	M.	1	Child 4 years ago. Retroflexion.
23	L. W.	M.	2	Last child 6 weeks. Floodings since labour. Acute retroflexion. 2 *ring.*
23	C. E.	M.	0	Pains in abdomen 4 years. Married 6 months. Pains worse since. Leucorrhœa. Uterus small, retroflexed.
24	E. S.	M.	0	Married 2 years. Catamenia regular. Leucorrhœa. Uterus much retroflexed. 1 *ring.*
24	J. F.	S	0	Leucorrhœa. Pain in back. Had a strain 6 weeks ago. Marked retroflexion, easily reduced by sound. 2 *ring.*
24	E. S.	S.	0	Weight at outlet of pelvis. Has much standing. Uterus, marked retroflexion and descent of organ. 2 *ring.*
24	L. E.	S.		Retroflexion.
25	M. A. S.	M.	1	Had child 2 years ago. Uterus tender; retroflexed to right side. Got about too soon after labour. 2 *ring.*
25	Mrs. O.	M.	2	Last child 1½ year. 1 miscarriage since, at 2 months. Menorrhagia. Pains in back. Pain on carrying. Uterus retroflexed. 2 *ring.*
25	S. A. R.	M.	0	1 miscarriage 4 months ago. Intercourse painful. Feeling of weight. Had Dysmenorrhœa before marriage. Uterus very sensitive. Retroflexed. 2 *ring.*
25	E. T.	M.	0	Married 3 years. 1 miscarriage at 3 months after lifting a bedstead. Retroflexion. Great sensitiveness of uterus. 8 *ring.*
25	E. T.	M.	0	Catamenia ceased 2 years. Fell down stairs at age of 18. Uterus retroflexed.

* The word 'ring' refers to the instrument used in the treatment of the case. (See remarks on *Treatment.*) The number indicates the size of the ring used.

CASES OF RETROFLEXION AND RETROVERSION OF THE UTERUS, &c.—*Continued.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
25	L. T.	S.	1	Had *child* 5 years ago, followed by floodings. Uterus large, retroflexed. 3 *ring.*
26	E. B.	M.	3	Last child 4 months old. Slight retroflexion.
26	E. W.	M.		Retroflexion.
	J. W.	S.	0	Menstruation formerly profuse; latterly, scanty or absent. Headache at periods. Retroflexion. Uterus bent with difficulty by sound.
26	J. A.	M.	4	Retroversion. Dysuria.
26	S. H.	M.	1	Child 9 years ago. Dysmenorrhœa; occasional puriform discharge for last 5 years. Inability to walk easily since the labour. Marked retroflexion; large uterus, with evident retention of fluid. 2 *ring.*
26	F. L.	M.	2	And 2 miscarriages. Uterus 1 inch too long, very movable, retroflexed.
26	S. S.	M.	2	Last child 4 years. Uterus soft, tender, retroflexed. *Ring.*
26	L. H.	M.	2	Last child 3 years. Miscarriage 2 weeks ago at 3 months. Pain in left side ever since first labour. Marked retroflexion. 2 *ring.*
27	P. W.	M.	0	3 miscarriages; last 3 years ago. Menstruation scanty. Retroflexion. Uterus very loosely fixed. *Ring.*
27	S. S.	M.	3	Now pregnant. Uterus retroflexed. *Ring.* Retention of urine.
27	C. B.			Retroflexion. 2 *ring.*
27	E. P.	M.	0	Married 5 years. 2 miscarriages at 3 months. Dysmenorrhœa. Acute retroflexion.
27	M. B.	S.		Retroflexion.
28	H. M.	M.	0	Married 9 years. Dysmenorrhœa. Uterus very tender.
28	A. B.	M.	1	Child 2 years ago. Much dysmenorrhœa. Severe retroflexion. Also a tumour at back of uterus. *Ring* 2.
28	Mrs. F.	M.	2	Last child 2½ years. Acute retroflexion. Uterus very sensitive.
28	E. R.	M.	3	Last child 2½ years. Retroflexion.
28	Mrs. S.	M.	1	Pain in back, and on walking. Purulent discharge. Retroflexion.
28	S. P.	M.	1	Menstruation profuse. Dysmenorrhœa. Sickening headache. Began walking 4 days after labour. Uterus retroflexed, and to left side.
29	L. H.	M.	2	Last 1½ year. Now pregnant 2½ months. Uterus retroverted. Reduced. *Ring.* Pregnancy went full term. Re-admitted 2 years later with recurrence of flexion.
29	E. R.	M.	3	Also 3 miscarriages since last child. Works in laundry. Menstruation profuse. Marked retroflexion. Perineum gone. 3 *ring.*
29	A. H.	M.	1	Child 1 year. Locomotion difficult. Leucorrhœa. Pain in side. Retroflexion. 2 *ring.*
29	M. J.	M.	2	Last 4 years. 1 miscarriage 3 years ago. Occasional floodings. Marked retroflexion. 2 *ring.*
30	A. F.	M.	0	Married 6 years. For 4 years pain in abdomen, and convulsions at menstrual periods. 'Seized suddenly with pain, sinks down to the floor, and faints.' Uterus very much retroflexed and very tender. 2 *ring.*
30	M. F.	M.	2	1 Miscarriage. Retroflexion. 3 *ring.*

CASES OF RETROFLEXION AND RETROVERSION OF THE UTERUS, &c.—*Continued.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
30	M. A. H.	S.		Menstruation irregular. Had a severe strain 6 years ago. Epileptiform attacks. Slight retroversion. Small almond-sized fibroid at back of uterus.
30	R. H.	M.	0	Married 8 years. Menorrhagia 1 year. Retroflexion. 2 *ring.*
30	H. K.	M.	2	Retroflexion.
30	C. C.	M.	3	Last child 2½. Menorrhagia. Retroflexion. *Ring.*
30	J. C.	M.	3	And 1 miscarriage. Prolapsus. Uterus very hard; retroflexed. Cervix has been slit up on each side by an operation performed some time since. 2 *ring.*
30	J W.	M.	6	Retroflexion.
31	M. L.	M.	1	Child 9 years. Menstruation profuse. Leucorrhœa. Pain. Locomotion difficult. Slight retroflexion. Uterus small. 2 *ring.*
32	E. F.	M.	2	Last child 7 years. 1 miscarriage since. Retroflexion.
32	H. B.	M.	3	Last child 7 years. [Was under Dr. G. H.'s care some years before for same disorder. Had children since.] Retroflexion. 4 *ring.*
32	E. F.	M.	2	Last 9 years ago. Retroflexion; chronic. 3 *Ring.*
32	L. G.	M.	0	Had 1 miscarriage. Retroflexion.
32	M. H.	M.	2	Last child 1 year. Now 2 months pregnant. Uterus retroverted.
32	Mrs. H.	M.	5	Last child 1⅛ year. Prolapsus. Perineum lacerated with first child. Operation 3 years ago. Reopened last labour. Retroflexion and hypertrophy of uterus. 3 *ring.*
32	Mrs. T.	M.	3	Last child 13 months. Prolapsus 7 years. Retroflexion and prolapsus of whole uterus externally.
32	H. B.	M.	4	Last 5 months ago. Retroflexion.
33	Mrs. G.	M.	3	A miscarriage 9 months ago. Retroflexion. 3 *ring.* The wearing of this ring was followed by an unusual event—the production of *anteflexion*—whereupon it was removed, and a fortnight later the retroflexion had returned.
33	A. E.	M.	6	Last child 5 years. 2 miscarriages since. Retroflexion. Simulating pregnancy.
33	M. A. H.	M.	1	Child 8 years. Pain in back and legs. Sickness. Retroflexion. 2 *ring.*
33	A. T.	M.	4	Last 1 year. 'Dreadful bearing-down.' Menstrual discharge pale. Uterus and vagina very tender. Retroflexion. 3 *ring.*
34	E. W.	M.	4	Last 13 years. Symptoms since last child. Retroflexion and inflammation.
34	A. C.	M.	3	Last 2½ years, and a miscarriage 1 year ago. Pain, back, side, bearing-down. Retroflexion severe. 3 *ring.*
34	Mrs. G.	M.	3	Last 11 years ago. Catamenia scanty, irregular. Continual pain in abdomen for last 4 years. Retroflexion. 3 *ring.*
34	Mrs. W.	M.	7	Retroflexion. Gravid uterus 2½ months. Prolapsus also.
35	Mrs. T.	M.	1	Child 11 years ago. Retroflexion. 2 ring.
35	Mrs. W.	M.	4	Last child 13 years ago. Retroflexion. Much tenderness. 3 *ring.*
35	Mrs. B.	M.	1	15 years ago. Marked retroflexion. Tenderness of fundus. 3 *ring.*
35	A. B.	S.		Retroflexion. Bright's disease.

CASES OF RETROFLEXION AND RETROVERSION OF THE UTERUS, &c.—*Continued.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
35	A. P.	M.	0	2 miscarriages. Married 14 years. Acute retroflexion.
35	E. G.	M.	0	1 miscarriage 12 years ago. Married 15 years. Catamenia ceased 4 months. Discharge puriform since. Forcing-pains. Uterus retroflexed; apparently glued in false position.
35	J. C.	M.	0	Married 3 years. Menorrhagia. Retroflexion (?). The tumour behind uterus is not clearly and certainly the fundus.
36	M. W.	M.	1	9 years ago. Catamenia scanty. Throbbing in back. 2 *ring*.
36	K. A.	M.	5	Last 4 years. 2 miscarriages last 3 years. Catamenia scanty; painful. Pain in back; walking painful. Retroflexion, and to left side. 2 *ring*.
36	J. L.	M.	2	Last 2 years. Uterus large, retroflexed. 3 *ring*. (Came first November 1867. Delivered June 1871 of a child.)
36	M. A. L.	M.	4	Last 2 years. Retroflexion.
36	M. A. E.	M.	0	Menorrhagia. Sharp retroflexion. Uterus large.
37	A. W.	M.	0	Married 15 years. 1 miscarriage soon after marriage, at three months from fall down stairs. Flooding before marriage, after a fall on ice. Acute retroflexion, and atrophy of uterus. 3 *ring*.
37	M. W.	M.	6	Last 2 years. Lactation for 14 months. Marked retroflexion. 1 *ring*.
37	E. M.	M.	0	Married 7 years. Catamenia ceased 1½ year. Irregular before. Uterus retroflexed and contracted. 2 *ring*. (Menstruation returned subsequently.)
37	S. G.	M.	4	Last 15 months. Prolapsus of bladder and a retroflexed uterus. Pregnant 3 months.
38	D. S.	M.	11	Last 16 months. Retroflexion and pelvic cellulitis.
39	E. G.	W.	4	Last 8 years. Retroflexion. *Ring*.
39	E. L.	M.	3	Last 5 years. Floodings for last year. Uterus large, retroflexed. *Ring*.
40	A. G.	M.	7	Last 3 years. Prolapsus for 7 years. Uterus retroflexed, hard, large. 3 *ring*.
40	M. A. S.	M.	1	17 years ago. Menorrhagia.
40	A. N.	W.	3	Last 3½ years. Retroflexion; much tenderness. 2 *ring*.
41	S. G.	M.	3	Last 13 years. 1 miscarriage 11 years ago. Prolapsus of a slightly retroverted uterus. 2 *ring*.
41	Mrs. E.	M.	12	Last 2½. Floodings for 4 months. Retroflexion and a small tumour behind uterus.
41	C. B.	M.	1	Married 7 years. Retroversion.
42	Mrs. G.	M.	4	Last 8 years. Involuntary micturition. Retroflexion.
42	E. H.	M.	8	Last 4 years. Menorrhagia. A miscarriage 3 months ago. Retroflexion.
43	S. H.	M.	1	Chronic retroflexion.
44	S. A.	M.	8	Last 1 month. Retroflexion. 3 *ring*.
44	E. N.	M.	10	Last 10 years. Retroflexion; hard uterus. 3 *ring*.
44	L. V.	M.	13	Last 11 months. Offensive discharge. Marked retroflexion. 2 *ring*.
44	J. C.	M.	12	A miscarriage lately. Profuse leucorrhœa. Retroflexion.
47	F. K.	M.	1	Child 27 years ago. Chronic retroflexion.
48	S. D.	M.	4	Last 18 years. Floodings at periods. Abdomen sore. Uterus small, retroverted.

CASES OF RETROFLEXION AND RETROVERSION OF UTERUS.—*Continued.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
48	Mrs. G.	M.	0	Married 21 years. Had severe strain at age of 23, which laid her up 5 months. Marked retroflexion. 1 *ring.*
49	A. E.	M.	6	Last 10 years ago. Symptoms date from last labour. Discharge offensive. Retroflexion of large uterus.
49	S. F.	M.	7	Slight retroversion.
50	A. T.	M.	1	Small retroflexed uterus. 1 *ring.*
50	S. J.	M.	7	Last 20 years ago. Prolapsus, retroversion. 3 *ring.*
52	H. R.	W.	19	Retroflexion. 3 *ring.*
56	J. M.	M.	4	Last 12 years ago. Prolapsus and retroflexion. Operation for narrowing of vaginal outlet performed.
56	H. K.			Retroflexion and prolapsus. Operation for narrowing of vaginal outlet performed.

CASES OF ANTEFLEXION (ASSOCIATED WITH DYSMENORRHŒA, STERILITY, CONVULSIVE ATTACKS, ETC.).

Treated as In-Patients at University College Hospital, from August 1865 to *December* 1869. *In Chronological Order.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
33	A. W.	M.	0	Married 10 years. Acute anteflexion at middle of cervix, supposed at first to have a fibroid tumour in the anterior wall of the uterus.
27	L. M.	S.		Anteversion. Thought to have been a case of tumour in anterior wall. (Probably anteflexion.)
22	S. S.	M.	0	Dysmenorrhœa. Sterility. Elongated cervix. *Amputation* of the cervix. (Probably a case of anteflexion.)
42	Mrs. H.	M.	0	Married 16 years. Dysmenorrhœa severe. Diagnosis tumour in anterior uterine wall. *Operation,* incision of cervix. (Probably anteflexion.)
23	E. M.	.		Dysmenorrhœa. Os uteri internum, very narrow. *Operation,* incision of cervix. Position of body of uterus not noted.
32	M. T.	S.		Vaginal hyperæsthesia and anteversion.
52	L. S.	M.		Anteflexion.
22	E. K.	M.	0	Dysmenorrhœa. Sterility. Married 6 years. *Operation,* incision of cervix.
28	E. G.	M.	0	Married 9 years. *Convulsive seizures,* or fits. Dysmenorrhœa. *Operation* for latter.
24	F. L.	M.	0	Married 5 years. Conical curved cervix with anteflexion. *Operation.*
29	J. M.	S.		Dysmenorrhœa for 9 years. *Operation,* amputation of cervix and incision.
33	S. E.	M.	0	Married 13 years. Dysmenorrhœa. Narrow long cervix (probably flexion also). Sound entered with difficulty. *Operation.*
22	S.	M.	1	Anteflexion following labour.

CASES OF ANTEFLEXION, ETC.—*Continued.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
22	A. A.	M.	0	Dysmenorrhœa. Anteflexion. *Operation*, amputation, and incision of cervix, ebony stem pessary afterwards.
34	J. A. B.	M.	0	1 miscarriage 8 years ago at 7 months. Conical curved cervix, anteflexion. *Operation.*
33	M. A. W.	M.	0	Hypertrophy of anterior lip of os uteri, anteversion. *Operation.*
25	E. G.	S.		Acute anteflexion and dysmenorrhœa. ? Ovary displaced forwards.
28	E. R.	S.		Marked anteflexion. Ebony stem pessary.
23	E. M.	M.	2	Also miscarriages. Anteflexion.
21	E. L.	S.		Dysmenorrhœa, much sinuosity of cervix. Os uteri looks directly upwards.
23	E. P.	S.		Dysmenorrhœa. Anteflexion. Cervix elongated. *Amputation* of cervix.
21	S. J.	M.	0	2 miscarriages. Anteflexion.
32	A. R.	M.	0	Married some years. Complete suppression of menstruation. Very narrow os. Slight anteflexion. *Operation.*
32	E. R.	M.	0	Married 12 years. Cervix much curved (? anteflexion). *Operation.*
22	M. A. H.	S.		Catamenia profuse. Curling of cervix and anteflexion. *Amputation* of cervix.
43	A. L.	M.	0	Married 13 years. Uterus large, hard, anteflexed. *Operation.*
33	M. S.	M.	2	Last 12 years ago. Congestion and anteflexion of uterus.
33	M.			Abortion. Anteflexion.
34	M.	M.	2	Last child 12 years ago. Anteflexion and slight prolapsus. Bright's disease. Incontinence of urine. Death. (Sound only used.)
22	M.	M.	1	Labour 3 weeks ago. Anteflexion.
42	A. Mc D.	M.	0	Married 20 years. Cystocele and intense hyperæsthesia of prolapsed portion. Anteversion. Complete cure after *two operations.*
50	H. W.	M.	0	Married 11 years. Uterus large, retroflexed.
24	J. J.	M.	0	1 miscarriage 3 months after marriage. Acute anteflexion. Uterus large. *Operation.*
29	H. H.	S.	0	Much dysmenorrhœa. Uterus large, anteflexed.
20	E. M.	M.	0	1 miscarriage 2 years ago. Acute anteflexion. *Operation.*
22	M. T.	M.	0	1 miscarriage 3 months after marriage. Acute anteflexion, hypertrophy, and elongation of cervix. *Operation.*
29	C. M.	M.	0	Married 5 years. No miscarriage. Acute anteflexion. *Operation.*
18	E. S.			Peritonitis. Suppression of catamenia. (? anteflexion.)
30	J. C.	S.		Dysmenorrhœa. Acute anteflexion.
28	F. A.	M.	0	1 miscarriage at 3 months, 5 months after marriage. Dysmenorrhœa since marriage. Menorrhagia of late. Acute anteflexion.
31	L. G.	S.	1	Anteflexion.
20	A. S.	S.		Catamenia every 14 days. For last 14 days hysterical 'fits,' about 7 each day. Difficulty in walking for 2 years. Anteflexion. Cure.
19	E. A.	S.		Anteflexion. Severe menorrhagia. Lifted heavy weights 2 years ago.

CASES OF ANTEFLEXION, ETC.—*Continued.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
28	Mrs. A.	M.	0	9 years married. No pregnancy. Dysmenorrhœa. Anteflexion. Hypertrophy and elongation of cervix. *Operation.*
17	M. V.	S.		Very hard work for one year, since which complete suppression of catamenia, inability to walk easily.
36	R. V.	M.	0	11 years married. No pregnancy. Sickness. Incontinence of urine. Latero-anterior flexion. A little albumen in urine.

CASES OF ANTEFLEXION OF UTERUS.

Treated as Out-Patients at University College Hospital, from August 1865 to *December* 1869. *Arranged according to Age.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
17	E. T.	S.		Catamenia only once, 1 year ago. Much standing; symptoms of anteflexion.
17	F. M.	S.		Catamenia very profuse. Anteflexion. (Cradle pessary.)
18	S. G.	S.		Catamenia profuse for 6 months. Dressmaker. Pain in hypogastrium on stooping or moving. Extreme anteversion. (Cradle pessary.)
19	E. C.	S.		Dysmenorrhœa. Pain in walking and standing. Anteflexion.
19	S. J. S.	M.	0	Married 1 year. Bearing-down since 2 years ago, when lifted 56lbs., and felt something give way. Anteflexion. (Cradle pessary.) January 1867.
19	A. S.	S.		Catamenia suppressed for 6 months. Pain in back 5 months. Anteflexion.
19	M. H.	S.		Catamenia suppressed 1 month. Uterus anteverted; os small.
19	P. G. W.	M.	1	1 child born 9 months ago. Uterus low down; anteflexed, large. (Cradle.)
19	E. W.	S.		Dysmenorrhœa. Pain on walking. Uterus large, low down, a little anteflexed. (Diagnosis on examination *per rectum.*)
20	Mrs. Mc. G.	M.	2	Pain in back. Uterus anteverted. (Cradle.)
20	C. M.	M.	0	Married 4 years. Occasional amenorrhœa for 3 months. Severe dysmenorrhœa. Uterus flexed at middle of cervix. Os small; compressed antero-posteriorly.
20	J. S.	M.	3	Last child 1½ year. Pain in ovarian region, and bearing-down. Catamenia profuse. Large uterus. An enlargement, tender to touch, felt anteriorly. (Probably anteversion of uterus.)
20	M. A. S.	S.		Anteflexion; small cervix. Dysmenorrhœa. Constant pain, back. (Cradle pessary worn 11 months, cure.)
20	M. M.	S.		4 years ago severe fall down 13 stairs. Catamenia profuse. Pains in back. Marked anteflexion. (Cradle.)
20	E. C.	S.		Amenorrhœa for 1 year. Uterus small, anteflexed. Sound readily enters.
20	S. B.	S.		Amenorrhœa. Catamenia only once several years ago. Headache. Pains in abdomen and back. Uterus small, a little anteverted. Os pervious. (1867.)

CASES OF ANTEFLEXION OF UTERUS.—*Continued.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
20	E. W.	S.		No appearance of catamenia at any time. Pain in abdomen for 3 years at monthly intervals. Once saw a very slightly coloured discharge 2 years ago. Uterus rather smaller than usual. Sound enters with difficulty. Uterus anteflexed. (1868.)
20	I. W.	M.	1	Child 8 months ago. Catamenia profuse. Uterus large, anteflexed. (Cradle.)
20	H. W.	S.		Anteflexion. (Cradle.)
20	E. T.	M.	0	Dysmenorrhœa. Catamenia profuse. Uterus large, congested, anteflexed. (Cradle.)
21	E. H.	M.		Anteflexion. (Intra-uterine stem.)
21	M. C.	S.		Acute anteflexion, and occasional prolapsus of bladder. Strain in lifting 2 years ago. (Cradle.)
22	Mrs. M.	M.	1	Anteversion. (Cradle.)
22	E. M.	M.	0	Married 2 years. Dysmenorrhœa, increased since marriage. Leucorrhœa. Pain in back. Uterus large, anteflexed. Sound difficult. (Cradle.)
22	Mrs. G.	M.	1	Child 3 weeks ago. Began to move about too soon after labour. Uterus anteflexed and low down.
22	E. G.	M.	0	Married 6 years. Uterus anteverted, and cervix too long. Behind uterus appears to be a *displaced ovary.*
22	Mrs. A.	M.	0	Was In-patient. Amputation of cervix performed later.
22	H. B.	S.		Vicarious menstruation. (Hæmoptysis) first after suppression of catamenia from a long walk. Slight anteversion.
22	M. S.	S.		Dysmenorrhœa. Was treated for 1 year by ring pessary for retroflexion. Uterus *now anteflexed.*
22	E. B.	M.	1	Leucorrhœa. Uterus large, anteflexed. (Possibly pregnant.)
22	M. T.	M.		1 miscarriage. (Was in hospital; had operation.)
22	Mrs. J.	M.	2	Anteflexion of a small uterus. Pain in ovarian region. (Cradle.)
22	E. P.	M.	1	3 months since labour. Uterus large, anteverted.
23	E. P.	S.		Dysmenorrhœa. Anteversion of uterus. Cervix conical. (Cradle.)
23	E. L.	M.	3	Last child 5 weeks. Hypogastric pain. Weak. Marked anteflexion.
23	M. S.	S.		Anteversion of uterus, and to right side. Sound difficult.
23	L. H.	S.		Menstruation irregular. Uterus hard, anteverted.
23	S. H.	S.		Menstruation scanty. Uterus anteflexed at middle of cervix. (Cradle.)
23	E. D.	M.	0	Married 2 years. Catamenia profuse. Uterus anteflexed, or a small fibroid tumour in anterior wall. Sound does not enter. (December 1866. Diagnosis probably missed).
23	M. F.	S.	1	1 child 6 months ago. Dysmenorrhœa. Anteversion.
23	E. A.	M.	0	Slight anteversion. Os soft. Possibly 7 weeks' pregnant.
23	E. V.	M.	0	Married 3 years. Anteversion of large uterus, bearing-down and slight prolapsus. (Cradle.) Formerly much standing.
24	I. P.	M.	1	Ill since labour 5 years ago. Anteflexion. (Cradle.)
24	M. A. R.	M.	(?)	Anteflexion. Operation (amputation part of cervix). Stem pessary. Cradle. Pregnancy. Cradle removed when certainly pregnant.

CASES OF ANTEFLEXION OF UTERUS.—*Continued.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
24	A. H.	M.	0	Anteflexion. Congestion of uterus.
24	C. L.	M.	0	Married 7 years. Suppression of catamenia for 6 years. Sickness. Severe pain in back. Can hardly walk. Anteflexion. Very weak and pale.
24	J. D.	S.		Dysmenorrhœa. Scanty menstruation. Anteflexion.
24	S. A. M.	M.	0	Dysmenorrhœa. Pain in back since a fall down stairs 1 year ago. Anteflexion.
24	Mrs. W.	M.	1	Anteflexion. Uterus large. Leucorrhœa. (Cradle.)
25	E. N.	M.	1	Also 2 miscarriages. Uterus large, anteflexed, congested. (Cradle.)
25	A. M.	M.	0	Married 5 years. 1 miscarriage 10 months ago. Anteflexion.
25	J. N.	M.	0	Married 7 years. Dysmenorrhœa. Scanty menstruation. Uterus enlarged anteriorly. (Probably anteflexion, 1866.)
25	J. C.	M.	1	Bearing-down pains. Pain in walking or sitting. Anteverted large uterus. (Cradle.)
25	C. D.	M.	1	Child 5 years ago. Occasional suppression of catamenia for 2 months. Sickness; bearing-down. Uterus tender, anteverted, large.
25	E. D.	M.	(?)	Anteflexion. (Cradle.)
25	Mrs. W.	M.	2	Twins 5 years ago. Great difficulty in walking. Micturition excessively frequent, 20 times a day for last 12 months. Extreme anteversion of uterus. *Cradle.* Cure of the urinary symptoms immediate.
25	A. T.	M.	2	3 miscarriages. Uterus large, anteverted.
26	Mrs. R.	M.	0	Catamenia scanty. Anteflexion. (Cradle.)
26	E. S.	S.		Uterus anteflexed. Dysmenorrhœa.
26	A. W.	M.	2	2 miscarriages. Pain in back. Uterus large, anteflexed. (Cradle.)
27	A. K.	M.	1	Leucorrhœa (? syphilis). Uterus large, anteverted. (Cradle.)
27	J. S.	M.	1	Leucorrhœa. Antero-lateral (right) flexion. (Cradle.)
27	S. P.	S.	2	Child 5 years ago. Pain in walking. Menorrhagia. Anteflexion, large uterus. (Cradle.)
27	Mrs. P.	M.	4	Uterus anteflexed. Pain in walking. Cervix long.
27	J. T.	S.	1	Uterus anteverted.
27	Mrs. S.	M.	1	Congestion and anteflexion of uterus. Gushes of purulent fluid occasionally. Difficulty in walking. (Cradle.)
27	L. B.	M.	0	1 miscarriage 4 years ago. Anteflexion. (Cradle.)
27	J. W.	M.	4	Last child 14 months. Menorrhagia. Leucorrhœa. A pain in back. Uterus anteverted; os hard, tender. (Cradle.) November 1866. One of the first cases of use of this instrument. Good results.
28	A. H.	M.	0	3 miscarriages. Anteflexion.
28	B. R.	S.		1 miscarriage 5 weeks ago. Uterus turgid, anteflexed. (Cradle.)
28	C. S.	M.	2	Menorrhagia. Pain right side intense, every 2 or 3 weeks. Anteflexion. (Cradle.)
28	M. D.	S.		Dysmenorrhœa. Scanty menstruation. Anteflexion.
28	E. G.	M.	0	Uterus large, *anteverted*. Menorrhagia; much pain in back. (Cradle.)
28	M. A. B.	M.	0	Dysmenorrhœa. Anteflexion. (Cradle.)
28	E. C.	M.	0	1 miscarriage at 6 months 3 years ago. Since leucorrhœa. Menorrhagia. Pain on standing or walking. Intercourse excessively painful. Uterus anteverted, ½ inch too long, hard, sensitive. (Cradle.)

CASES OF ANTEFLEXION OF UTERUS.—*Continued.*

Age.	Initia's	Married or Single.	No. of Children.	Remarks.
29	L. M.	M.	0	Married 2 years. Probably had a miscarriage soon after marriage. Dysmenorrhœa. Leucorrhœa. Uterus acutely anteflexed.
29	C. S.	M.	0	Married 5 years. Dysmenorrhœa since marriage. Pain in back and abdomen. Uterus anteflexed.
29	M. L.	M.	2	Last child 3 years. Dragging on right side, pain in back. Uterus anteflexed and to right.
29	Mrs. F.	M.	0	5 miscarriages. Uterus anteverted.
29	M. J.	M.	2	Menorrhagia. Anteflexion. (Cradle.)
29	A. B.	S.		Tightness and pain in abdomen. Anteflexion, large, congested uterus. (Cradle.)
29	M. W.	S.		Leucorrhœa. Anteversion (? syphilis).
29	E. W.	M.	1	Child 10 years ago. Dysmenorrhœa. Soreness and pain in lower and right abdominal region on standing or sitting. Uterus anteflexed and to right side. (Cradle.)
29	E. B.	M.	4	Works at sewing machine. Pain back.
30	E. L.	M.	1	Pains in back on standing. Walks indifferently. Anteversion. Loaded rectum. (Cradle.)
30	E. H.	S.		Catamenia scanty. Uterus low, anteflexed, tender. (Cradle.)
30	E. S.	M.	3	Dysmenorrhœa. Pain in walking. Uterus anteflexed. Os wide open. Uterus $\frac{3}{4}$ inch too long.
30	A. S.	M.	1	Pain back and down right leg. Anteversion. Cradle.
30	E. P.	M.	0	Menorrhagia, debility, back-ache. Carries heavy weights. Uterus enlarged anteriorly (probably anteflexed. April 1866.)
30	A. C.	M.	2	Menorrhagia in gushes. Uterus very mobile, hypertrophied (probably anteflexed in upright position.)
30	E. B.	M.	2	Last child 5 years. Bearing-down, pains back and left side. Leucorrhœa. Anteflexion (and tumour?).
30	Mrs. T.	M.	0	Married 11 years. Catamenia ceased 6 years ago. Suffers much from headache. Uterus sharply anteflexed.
31	A. L.	M.	2	Catamenia every fortnight. Uterus anteverted.
31	Mrs. H.	M.	0	Married 8 years. Catamenia seldom. Pains back and side. Leucorrhœa. Uterus antero-lateral flexion: low down. (Cradle.)
31	S. S.	M.	4	Bearing-down pain in back. Uterus anteverted. (Cradle.)
31	S. T.	M.	3	Last child 3 months ago. Pain in right groin, and on walking. Began soon after labour. Anteflexion of large uterus. (Cradle.)
32	M. L.	M.	1	And 3 miscarriages. Anteversion.
32	E. M.	M.		Anteversion of a large uterus.
32	M. G.	M.	0	Married 10 years. Almost complete amenorrhœa. Uterus anteflexed; canal tortuous and narrow.
32	Mrs. F.	M.	2	Last child 11 years. Uterus large, anteverted, and pain in side on walking and standing.
32	M. A. W.	M.	0	12 years married. 3 miscarriages, last 5 years ago. Constant gnawing aching pain in abdomen. Micturition frequent. 'Sinking' sensation. Uterus anteflexed. (Cradle.)
32	E. W.	M.	7	Anteversion. Apparently from a fall.
32	E. W.	M.	9	Miscarriage 3 weeks ago. Anteflexion.
33	C. P.	M.	5	Uterus large, anteflexed, hypertrophied. (Cradle.)
33	A. B.	M	5	Floodings. Over lactation. Anteversion of uterus.

CASES OF ANTEFLEXION OF UTERUS.—*Continued.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
33	D. H.	M.	2	Last 11 years. Pain in groin and sickness for 2 months since a strain received in cleaning windows. Anteflexion.
33	M. W.	S.		Dragging in right ovarian region for 1 year. Anteversion.
33	A. N.	W.	0	Uterus anteflexed. Bearing-down for 10 years. (Cradle.)
34	E. S.	M.	1	13 years ago. Menstruation scanty. Back-ache and pain in groins. Locomotion wearisome. Uterus very mobile. Anteflexion.
34	A. T.	M.	0	Married 7 years. Catamenia scanty. Pain back, and left leg, also on walking. Has hernia. Uterus anteverted.
35	L. H.	M.	2	Severe pain back. No leucorrhœa. Uterus low down, slightly anteflexed.
35	Mrs. H.	S.		Anteversion. (Cradle.)
35	C. S.	M.		Bearing-down. Anteflexion.
35	Mrs. R.	M.	(?)	Stricture of cervix. Anteflexion.
35	J. L.	M.	2	Last child 6 years. 2 miscarriages. Anteflexion. Large uterus. (Cradle.)
36	E. B.	W.	0	Distress in walking and pain in hips. Dysmenorrhœa. Uterus low down, anteflexed. Sound difficult. (Cradle.)
37	M. D.	M.	0	Anteversion of uterus, and tumour in anterior uterine wall (?). Occluded Nabothian follicle at os.
37	Mrs. T.	M.	3	Last child 11 years. Uterus very large, anteverted. (Cradle.)
38	F. A. C.	M.	6	9 miscarriages. Pain in back. Anteflexion. (Cradle.)
38	Mrs. W.	M.		Anteflexion. (Cradle.)
39	E. C.	M.	1	Anteflexion of GRAVID UTERUS. Pregnancy about 3 months.
40	M. W.			Anteflexion. (Cradle.)
40	Mrs. M.	M.	8	Suckling last child; 6 months old. Great pain in back on lying down, and on right side. Uterus large, anteflexed, too mobile. (Cradle.)
40	M. A. W.	M.	0	Anteversion.
40	E. B.	M.	5	Hæmorrhage on intercourse. Uterus large, anteverted. (Cradle.)
41	Mrs. B.	M.	12	3 miscarriages. Pain in back, bearing-down. Anteflexion.
42	A. N.	M.	0	Married 21 years. Pain in left side and back, and on walking. Acute anteflexion, impeding entrance of sound.
42	A. B.	M.	2	(?) Anteflexion.
42	E. S.	M.	1	Pain in back some years. Walking, and especially standing, painful. Uterus anteflexed. Angular curvature of spine.
42	L. C.	M.	12	Miscarriage 15 months ago. Pain in back since. Menorrhagia. Uterus a little anteverted. (Cradle.)
43	S. M.	M.	3	2 miscarriages. Bearing-down 14 years. Anteversion. (Cradle.)
43	E. H.	M.	5	Menorrhagia. Clots. Offensive discharge, Os large. Uterus large anteriorly (probably from anteflexion).
44	Mrs. D.	M.	0	Married 18 years. Catamenia ceased some months. Anteflexion.
44	J. C.	M.	10	Last child 4 years ago. Bearing-down. Anteflexion.
45	E. R.	M.	4	Last child 14 years. Continual pain in back and in right ovarian region. Can only walk $\frac{1}{4}$ of a mile. Uterus, mobile, anteflexed. Os hard, irregular. (Cradle.)

CASES OF ANTEFLEXION OF UTERUS.—*Continued.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
47	S. J. D.	M.	4	Last child 20 years. Dysmenorrhœa. Swelling of abdomen. Anteflexion. (Cradle.)
47	J. T.	M.	6	Catamenia ceased 4 years. Pain in walking; weight lower abdominal region. Uterus large, anteverted. (Cradle.) (Catamenia returned day following use of cradle.)
48	M. A. G.	M.	4	Catamenia ceased 3 years. Pain left side and back. Anteflexion.
51	S. B.	M.	5	Pain right ovarian region, bearing-down. Frequent micturition. Anteversion. (Cradle.)
51	E. H.	M.	9	2 miscarriages. Pain in back and down thighs. Uterus a little anteverted.
54	Mrs. H.	M.	7	Pain in back 3 years. Walking painful. Uterus anteverted. (Cradle.)
63	S. B.	M.	10	Prolapsus of posterior vaginal wall. Slight anteflexion. Vascular tumour of meatus.

REMARKS ON THE FOREGOING CASES OF RETROFLEXION, ANTEFLEXION, ETC.

These 296 cases comprised the large majority of those patients who applied for relief at University College Hospital who were suffering from symptoms evidently referable to the uterus. (See Tabular Statement of 1,205 cases in Chapter I., p. 5.) Many of them complained of pains and inconveniencies, incapacitating them for carrying on their ordinary avocations, many in consequence of disturbances of the menstrual functions, many in consequence of their being troubled with obstinate leucorrhœa. Some of them were invalids of many years' standing.

I propose to analyse these cases in the first place in reference to those conditions of the physical life of the woman which are confessedly the most important, and which offer the most conclusive test of the soundness or unsoundness of the generative organs, viz., the possibility of pregnancy, the interference or otherwise with the natural progress of gestation. We may then enquire how far these cases show the frequency of *sterility* and the frequency of *abortions* in association with flexions of the uterus.

Influence of acquired deformities of the uterus in producing STERILITY:—

Of the 296 cases, 235 were married or had had children, including 100 cases of retroflexion and 135 cases of anteflexion.

Of these 235 cases, 81 were sterile, in the sense that they had either had no children or had only had abortions.

Of these 81 cases, 57 cases were absolutely sterile, 24 had only had abortions.

In a very considerable number of cases the patients had had one or more children, but had been subsequently sterile. These cases are not included in those just described, but their importance is equally great, and the interference with subsequent procreation of children was evidently connected with the presence of a deformity of the uterus acquired subsequently to the first pregnancies. An additional proof, if such were needed, of the effect of the flexion in producing such 'secondary sterility' resides in the fact, presenting itself on looking over these cases, that the symptoms leading the patient to seek for medical advice had very generally existed since the birth of the last child.

Influence of acquired deformities of the uterus in producing *miscarriages*:—

Taking as before the 235 married women found to be affected with ante or retroflexion.

In these 235 cases, 61 patients had had abortions.

Of these 51 patients, 24 were affected with retroflexion, 27 with anteflexion.

Of the 24 retroflexion patients who had had abortions:—

The greatest number of abortions in any one case was 3.

One patient had had 'several.'

The total number of abortions was upwards of 32.

Of the 27 anteflexion patients:—

The greatest number of abortions in any one case was 9.

One patient had had 'some.'

The total number of abortions was upwards of 54.

With reference to the 'abortion' question care has been taken not to mix up with these cases of abortion due to deformity of the uterus, cases of abortion due to syphilis. The absolute frequency of abortions is not indicated in the foregoing figures. There were 27 other cases of abortion who applied for advice and not included in the 296 cases of flexion. Of these 27 cases my information is not precise, except in some instances, for the reason that at the date many of them occurred the connection between flexions and abortion had not attracted my attention. Concerning many of them, however, I am able to state that the abortion was evidently connected with the presence of such flexion. The latter cases of this kind have also given proof of the

connection which subsists between *retention of portions of the ovum* after miscarriage and flexion.

A further remark as to the *comparative frequency of abortions in retroflexion and anteflexion of the uterus*:—

The foregoing figures show that anteflexions are about equally potent in producing abortions with retroflexions. This is a fact which is as yet certainly unrecognised by eminent authorities, chiefly, probably, because anteflexions are frequently overlooked. As a fact, the number of abortions due to anteflexion exceeded those due to retroflexion in the cases above related. It appears that, on the whole, anteflexion does not so certainly occasion miscarriage as retroflexion.

CHAPTER XI.

TREATMENT OF FLEXIONS OF THE UTERUS.

General Principles of Treatment.—Indications.

Treatment of Retroflexion.—Question as to Employment of Leeches—Limits of Treatment—Position of the Body, and Rest essential—Use of Sound—Method and Precautions necessary—Ring Pessary (Author's), described—Improved Ring Pessary for Difficult Cases—Other Pessaries—Author's Combination of Ring and Stem Pessary—Dilatation and Moulding of Uterus—Radical Operation of Koeberlé—Precautions during Pregnancy, and to prevent Recurrence of Disease after Labour.

Treatment of Anteflexion, etc.—Indications, according to Acute or Chronic State—Limits of Treatment—Position, Rest—Sound—Cradle Pessary—Stem Pessary—Incision of Cervix—Dilatation of Cervix, &c.—Treatment during Pregnancy and to avert Miscarriage.

TREATMENT OF FLEXIONS OF THE UTERUS.—GENERAL PRINCIPLES OF TREATMENT.

There can be no doubt that the first element of success in the treatment of flexions of the uterus is perfection of diagnosis. It is not sufficient to know that the uterus is flexed. It is necessary also to be aware of the condition of the uterine texture in other particulars, its firmness or softness, the size of the uterus, its position in the pelvis, and, in fact, its whole relations. The disease to be dealt with being of a mechanical nature, we can only deal with it advantageously by carefully endeavouring to appreciate the mechanical conditions with which it is associated. The indication for treatment will, therefore, be very much guided by the condition of the uterus, its position, and the state of its connections. The first indication which we have before us in the treatment of flexions is to *place the uterus in a natural condition as regards its shape and as regards its position.* This is not asking for very much, but the difficulty of attaining these ends is often very considerable. This is the primary and indeed the principal indication, and the various mechanical devices which may be resorted to for the cure of flexions should all have this end in view. The principle involved in this indication is so simple and must so commend itself to common sense that it seems unne-

cessary to defend it. It would seem, judging from certain opinions which have been advanced on the subject, that it is a matter of indifference to the uterus as to its shape and as to its position. Nothing is more opposed to clinical facts and experience. Relief of suffering and restoration to health can generally be obtained only by attention to this primary and rational indication.

So far for general principles. I now proceed to consider the appropriate treatment of the various forms of flexion.

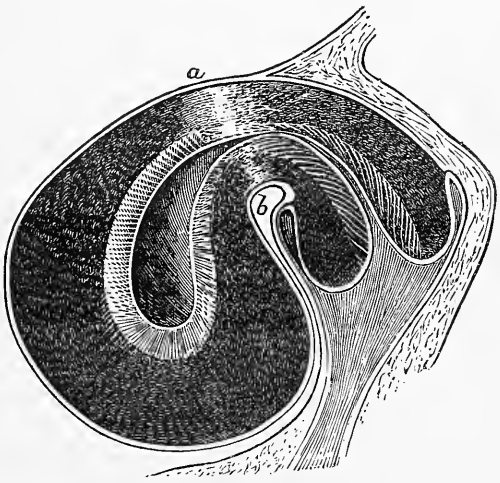
TREATMENT OF RETROFLEXION OF THE UTERUS.

In cases where the retroflexion is acute and attended with much congestion and irritative symptoms the application of leeches is considered by some necessary. I do not participate in this view of the matter, regarding, as I do, the congestion as a secondary and not a primary element. The parallel case is the condition of the arm preparatory to the performance of the operation of venesection. Here we bandage the arm, and thus obstruct the circulation in order to procure a temporary congestion. It is obvious that we should never dream of treating congestion of the arm so produced by abstraction of blood as a curative measure; the obvious course would be to take off the bandage and thus restore the circulation. The mechanism of congestion and 'strangulation' of the uterus has been already described (see p. 34), from which it is apparent that the pathological condition present can only be effectually dealt with by the mechanical procedure of altering the shape of the uterus. To which it may be objected that admitting all this, it may still be better to unload the congested uterus by depletion in order to facilitate the mechanical treatment. I can only say that I have found no difficulty in commencing the mechanical treatment at once, and without such preparatory treatment, which, under the circumstances, I regard as a loss of time as well as a sacrifice of the strength of the patient. It is obvious enough that the employment of leeches, or local depletion, will be beneficial: but as palliative measures only.

I now proceed to indicate the plan of treatment which should be pursued in order to carry out the indications before mentioned. The treatment to be adopted must necessarily differ in different cases according as we have to deal with a recent or chronic case of retroflexion. Thus, it makes all the difference as to whether the disease has existed two or three months, or whether it has existed two or three years. Then, again, there is a difference according to the degree of flexion, whether it is an

acute, or a slight flexion. All these points have to be considered in reference to treatment. There is a very striking difference in regard to curability under these different circumstances. A case of retroflexion which has only existed for two or three months, and which is not very acute in regard to the degree of flexion, we may be able to cure in a few weeks. If the flexion has existed for two or three years it may be expected that the treatment will not be completely successful under, perhaps, six or eight months (see fig. 38). And in cases where the malady has existed for nine or ten years the treatment may not be successful even in a much longer time in removing absolutely all effects of the disease. The changes in the texture of the uterus itself are sometimes so great that it is difficult to restore the organ to its natural state, to its natural size and position, and its walls to their natural thickness (see fig. 46, which represents a long-standing case, with great atrophy of the posterior wall). And I have known cases in which the long continuance of the compression process on the tissues in the posterior

Fig. 46.



wall of the uterus has left behind it a neuralgia of troublesome character, even after the shape of the uterus had been restored (see p. 211). This is what might be expected, and it is analogous to those cases where inflammatory processes resulting in compression of nerve trunks in other parts of the body leave behind them a persistent and intractable neuralgia. I have never met with this result in the case of retroflexion of the uterus except in

very long standing cases, and even under these circumstances the occurrence is exceptional.

It is quite certain that with time and patience the shape of the uterus may be altered in very long standing cases, the basis of success being the fact that the uterus is a very plastic organ, and that if manipulations are performed carefully, and out of the reach of pyæmic influences, they are generally borne without difficulty.

The first point to be attended to in the treatment of retroflexion of the uterus is *the position of the body.* The patient should lie, not upon the back, but upon the side, or, still better, upon the face. This is effected by making a kind of inclined plane with pillows placed under the chest, the arm being placed behind the patient's back. By a little management a very comfortable position is thus attained. The result is that the weight of the fundus uteri is in a great degree thrown forwards instead of backwards, and great assistance in the mechanical treatment is thus afforded.

In severe cases this position of the body is in fact absolutely necessary, and I have seen patients who before had been in a state of absolute torture while lying flat on the back restored to comparative comfort by the simple procedure of enforcing the position on the face.

The length of time during which it is necessary to maintain this position of the body depends upon the acuteness of the case. But when there is much irritation about the uterus it is absolutely necessary for the patient to remain in this position for some weeks. The horizontal position must be maintained for a very considerable time in most cases. The upright position is destructive of progress in the right direction. All exertion must be absolutely interdicted for a time varying according to circumstances. In this manner we carry out as far as possible what may be termed the treatment of *rest.* The uterus is allowed to rest; and this forms the most important element in the treatment of such cases.

The Use of the Sound.—The sound is a most valuable instrument in the treatment of these cases. The method which I recommend in the treatment of a recent case of retroflexion is that the sound, very slightly curved indeed, should be introduced gently and gradually into the uterus, and then gently turned round, so that the concavity looks forward, and the uterus thus restored to its proper shape. That the sound should be used once

in two or three days, perhaps at intervals of a week, and that this treatment should be combined with the continuous use of the ring pessary presently to be mentioned. In a recent case, the use of the sound is generally unnecessary for more than a limited time, perhaps for a week or two. In a chronic case, where disease has existed perhaps for some years, the use of the sound is necessary at intervals of a week, employed with great care, extending over a period of possibly two or three months, and we may be obliged to intermit the use of it occasionally. When the sound is used, for altering the shape of the uterus, it should be bent very slightly indeed. The sound must, in fact, be very nearly straight. The difficulty of introducing the sound is got over by gently pushing up the fundus uteri at the same time that the sound is gently passed inwards with the concavity backwards. Even in cases where the flexion is very acute the bend of the sound need not be great if the procedure be simultaneously adopted of pushing up the fundus. The use of the sound alone is rarely attended with any permanent benefit. The uterus almost invariably returns to a flexed condition a few moments after the sound is withdrawn. The rapidity with which the flexion returns on withdrawal of the sound is a useful indication as to the difficulty or not of the cure. The sound should always be used gently and held lightly. Force must not be employed, for the process of unbending the uterus in a chronic case is necessarily a long one and involves considerable change and stretching of the tissues. It is very advantageous in many cases to hold the uterus in its proper shape by means of the sound for half an hour or an hour at a time. In chronic cases this process repeated at intervals is very successful.

It must also be recollected, in reference to the use of the sound, that the uterus may be glued down by adhesions in the retro-uterine pouch, in which case the restoration of the organ by the instrument in question is of course impeded or prevented.

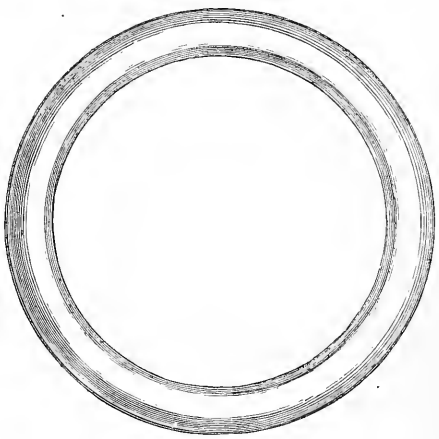
The Ring Pessary.—Experience has shown me that in the ring pessary, modified according to circumstances, we have a most complete and satisfactory method of dealing with cases of retro-flexion. It is one which is adapted to almost all cases, sufficing frequently alone, but almost invariably if conjoined with the use of the sound (as just described), and a proper amount of rest in enabling us to deal with very difficult cases. I cannot say too much in its favour.

The principle of the treatment by the ring pessary is that it

pushes the fundus uteri upwards by supporting the cul-de-sac of the vagina behind the os uteri in an elevated (and proper) position in the pelvis. It further acts advantageously in drawing the os uteri backwards, and thus further contributing to correct the faulty shape and position of the uterus.

The ring pessary was first used by Dr. Meigs. It was improved upon by Dr. Hodge, who gave the ring a somewhat quadrangular shape. Further improvements have been made by myself in rendering the instrument more capable and easy of adaptation to the particular case. The following is a description of the ring pessaries which I have now employed for some years, and with every reason to be satisfied with their effects. They consist of a series

Fig. 47.*



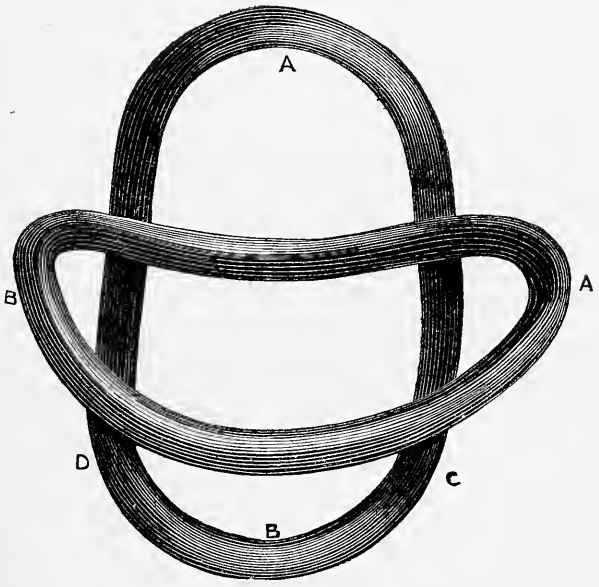
of rings of copper wire covered with gutta percha; they measure from $2\frac{1}{4}$ inches to $4\frac{1}{2}$ inches in diameter, and are numbered 1, 2, 3, $3\frac{1}{2}$, 4, 5, and so on. As supplied by the maker (Mr. Coxeter was the first to make them), they are quite round. When properly made, and the gutta percha of good quality, they are very readily moulded to a proper shape, that shape being adapted to the case, and the ring of a proper size selected for use.

These instruments are very durable, and are unaffected by the discharges; and they are consequently capable of being worn for a period of months together. The numbers 2, 3, and $3\frac{1}{2}$ are those which are most generally applicable in cases of retroflexion. No. 1, which is the smallest, is occasionally required in the

* Fig. 47 represents one of these rings, actual size, number one.

case of unmarried women, for in such cases the instrument must be narrow to facilitate its introduction. Latterly, I have had certain of these rings of copper wire covered, not with gutta percha, but with india-rubber, and this material is, perhaps, superior to gutta percha in all cases where the instruments have to be taken into tropical climates; for it has been found, practically, that the gutta percha instruments, after having been made for some time, are rather liable, unless the gutta percha is very pure, to become cracked in the process of bending them, which is, of course, an objection in an instrument which has to be worn for a long time. On the whole I prefer gutta percha for ordinary purposes. The form which the instrument should have is nearly identical in all cases. The typical form for the instrument should be that shown in the figure (see fig. 48), which is ovoid, one end being a little wider than the other, and the

Fig. 48.*



whole slightly curved to adapt it to the curve of the vagina. The instrument is introduced with the smaller end A first, and a little obliquely as regards the aperture of the vagina.

* Fig. 48 represents two views of the same instrument, in order to give an accurate idea of the shape. The size here shown, No. 2, is the one most frequently required. (The drawing is taken from a photograph.)

After the instrument is introduced half-way, it is necessary, by means of the forefinger of the right hand passed into the canal, to guide the instrument behind the *os uteri*, for unless this precaution be attended to the instrument almost invariably passes in front of the cervix and into a wrong position. The small or upper end of the instrument must be behind the *os uteri*. It thus acts as a permanent support to the upper end of the vagina (see fig. 49, which represents the instrument *in situ*), and pre-

Fig. 49.

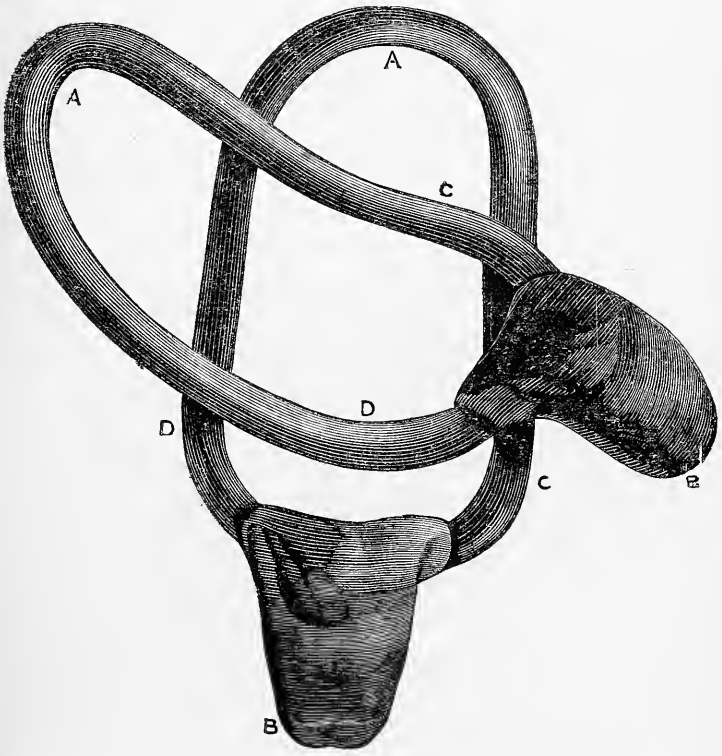
vents the fundus of the uterus descending downwards. The shape as well as the size of the instrument must be modified according to circumstances. If the perineum has been injured, the instrument must be a little broader below than usual. If the vagina is capacious a larger instrument will be required than if the vagina is small and narrow. The success attending its employment is absolutely dependent on its being carefully fitted to the particular case. If the uterus is very sensitive, the upper part of the instrument may with advantage be made thicker, which can be readily effected by soldering on an additional thickness of gutta percha at the upper part. As the cure advances, and as the uterus becomes

raised more and more, the size of the pessary requires to be somewhat increased, so as to follow up the retreating fundus.

As a matter of fact I have never found it impossible for the patient to bear the use of this instrument when proper attention is paid to the position of the body as before described, and when the sound is simultaneously employed. In cases of acute retroflexion with great sensitiveness, the pressure of the instrument will not be borne unless attention be directed to these points.

There are two difficulties which may occur in connection with the use of the instrument, and with which I have become

Fig. 50.*



acquainted by experience. One is, that the instrument is liable to turn round when the pressure from above is great. When the flexion is of considerable duration, or when the sound is not

* Fig. 50 represents (from a photograph) the new pessary, which may be termed the 'improved ring pessary.' Two views of it are given. The size here shown is made from a No. 3 ring, but larger or smaller rings are needed in different cases

employed regularly, the instrument is sometimes liable to turn round on its axis in the vagina, and it then comes to lie with its long diameter across this canal, whereby the condition of the patient is aggravated instead of improved. I have discovered a method of preventing this; and the instrument here shown (see fig. 50) exhibits the manner in which this idea is carried out. It is by adding to the ring at its lower part a short projecting stem. This stem projects very slightly at the vulvar aperture; and in this way rotation of the instrument is absolutely prevented. This instrument must of course be made of a proper size, but the principle is equally applicable to all sizes of the instrument. I have no hesitation in saying that this new instrument is the most valuable with which I am acquainted for dealing with an obstinate case. For the last two years I have employed it in difficult cases. It has been found to work most admirably, and I have succeeded with it in cases which had before defied my attempts. In nine cases out of ten it will be found that the ordinary oval ring, without this addition, answers very well; but in some few instances it will rotate.

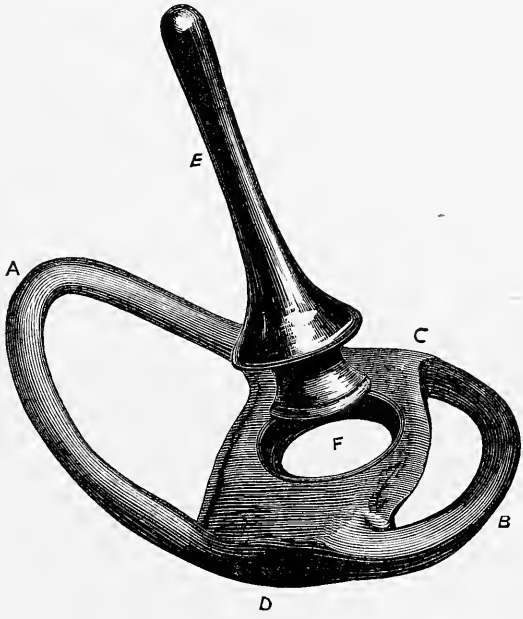
The slight projection does not add anything to the inconvenience of the instrument, and I have known patients become pregnant while wearing it.

Another difficulty in application of the ring pessary arises in cases where the perineum has been very much lacerated and injured by a previous labour, the support for the instrument being in such a case more or less wanting. There is then great difficulty in making an instrument which shall be retained. This is sometimes overcome by increasing the width of the instrument below; but in other cases this cannot be done, and an operation for the restoration of the perineum is essential under these circumstances as a preliminary. The instrument is supported from below by the soft parts, and if these soft parts are very much injured, the support is *pro tanto* removed.

Other Pessaries.—There are some other instruments which effect the same objects as those above recommended, but in a somewhat different way. Thus Dr. Priestley's pessary for retroflexion equally supports the upper extremity of the vagina by a loop-shaped wire covered with gutta percha, but in his instrument the *point d'appui* is from without, a curved stem being attached by tapes externally. Another instrument constructed of ebonite, the contrivance of Dr. Thomas, of New York, effects the same object, the fixed point being obtained from without.

Stem Pessary.—Retroflexion of the uterus is not unfrequently treated by the use of a *stem pessary* of various forms. I formerly employed the *stem pessary* in the treatment of retroflexion, but I have, of late, almost given it up, having found other methods of treatment so generally successful; having found, also, that unless very great care is exercised with this stem pessary, mischief may result. I have, however, in one or two cases, employed the stem pessary conjointly with the use of the ring pessary. The instrument here shown (see fig. 51) is capable of being employed

FIG. 51.*



for this purpose with safety. It is a ring pessary of the ordinary shape. Across this ring pessary I place a band of gutta percha C to D, rather below its middle part, and in that bend of gutta percha there is an aperture F, which receives the lower part of the stem E. The stem—which should not, unless the uterus is longer than usual, exceed the length here represented—is thus supported in the ring in a suitable position. The stem E is perforated at its base, this perforation being large enough to receive the point of the sound, which then acts as a holder. We thus get the

* Fig. 51 represents the instrument. The drawing is from a photograph.

double advantage of the use of the ring and the stem. I have employed this instrument in some cases with great advantage, and in instances where, for various reasons, it was impossible to go on using the sound for any length of time.

I have now entirely relinquished the use of the air ball and stem pessary described in the last edition of this work.

Dilatation and Moulding.—Under this term may be described a process, recommended by Dr. Moir, for the cure of retroflexion, consisting of dilatation of the uterine canal by tents and the subsequent wearing of a stem pessary. The process is undoubtedly sound in principle, but I have not employed it, having found the uterus capable of being moulded into better shape by careful use of the sound and the oval ring pessary. Here it may be remarked that the rectification of the position of the uterus is a matter of great importance in chronic cases, and however the change in shape is effected, in the subsequent treatment the oval ring pessary cannot in my opinion be dispensed with.

Incision of the Cervix.—Amongst other procedures for cure of chronic retroflexion, is incision of the cervix, and summary alteration of the shape of the uterus by this means. I can conceive very chronic cases of retroflexion possibly advantageously treated in this manner, but I have not had recourse to it.

Radical operation.—Here may be mentioned an operation performed by Koeberlé in Strasburg, March 27, 1869, for the radical cure of retroflexion by gastrotomy, and fixation of the uterus to the anterior abdominal wall by means of the broad ligament, which, being brought forward, was fastened to the edge of the abdominal wound. Dr. Schetelig, who describes the operation,* states that the patient recovered, and the displacement of the uterus was cured. The patient's age was twenty-five. The duration of the malady was $2\frac{1}{2}$ years. The operation is a curiosity and the procedure ingenious, but it obviously involves a confession of deficient mechanical resource of less dangerous kind.

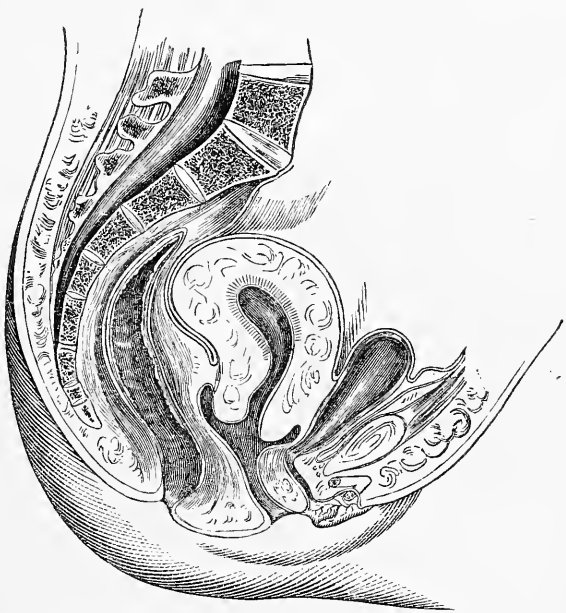
Treatment of Retroflexion in connection with Pregnancy.—The ring pessary is so perfect in its action when well adjusted, that pregnancy very frequently occurs during its use, and that of course in cases where pregnancy would not otherwise be possible. If pregnancy supervenes, the ring pessary should be allowed to remain for the first three and a half or four months of

* Dr. Schetelig, *Ueber eine Radicaloperation zur Beseitigung der Retroflexio und Retroversio Uteri; Sep. Abdr. a. d. Centralblatt f. d. med. Wissensch.* 1869. No. 27.

pregnancy and then removed. It may be advisable sometimes to extend that time, but it is generally necessary to allow it to remain as long as that. If it is removed before, the patient is almost certain to have a miscarriage; and, indeed, miscarriage is liable to occur even when the instrument is worn, unless the patient is careful to maintain the horizontal position.

The treatment of cases of retroflexion *subsequent to the delivery* of the patient is a very important subject. If there has been a well-established retroflexion of the uterus, and pregnancy intervenes, it will be found that after the pregnancy is over the retroflexion will return, unless precautions are adopted. I have observed this effect over and over again. In such a case, there-

Fig. 52.*



fore, after the patient has recovered, and at the end of the month, the patient should be examined, and if any tendency whatever to a recurrence of flexion is found to be present, it is necessary for the patient to wear a ring pessary. This should be worn for two or three months, at the end of which time it may generally be safely removed.

* Fig. 52 represents commencing retroflexion of the uterus shortly after delivery, the uterus being still large and involution incomplete.

TREATMENT OF ANTEFLEXION AND ANTEVERSION OF THE UTERUS.

This important disorder of the uterus is by no means an easy one to cure, if the affection be long-established. Before all great exactness in the diagnosis is required. Success in the treatment of anteflexions greatly depends upon the exact appreciation of the degree of the bend, the resistance of the uterine tissues, their thickness, and other physical qualities. Not less important also is a study of the mobility of the organ, and an appreciation of the degree to which the uterus has lost its natural degree of firmness of fixation in the pelvis. For as already pointed out, important defects in this latter particular are rather liable to be overlooked. The duration of the malady is of some importance in reference to curability. If the disease has existed many years, or if the patient has not had any children, the difficulty of cure in an acutely anteflexed uterus is very considerable. The uterus has become rigidly set in its distorted condition, and it requires to be slowly and gradually unbent. This is a process which may occupy some time. On the other hand, where the malady is of recent date, it is rectified with much greater ease and facility.

The first element in the treatment is the position of the body. The patient must be made to lie continually on the back, and bodily exertion must not be permitted. Stooping, or lifting, or carrying objects are especially to be avoided. Going up and down stairs is very prejudicial. The uterus must be at rest; and motion of the body generally is therefore to be avoided. When the disorder is unappreciated and, as is not uncommonly the case, the patient is told to walk and get rid of her sufferings by exercise, the necessity for these injunctions are made strikingly evident. I have seen cases in which the suffering on walking was extreme, and, when persisted in, has led to the production of very severe symptoms. To carry out this indication properly, there must be such a disposition of the body as will keep the uterus in a state of rest in the pelvis.

Various bodily exertions alluded to, such as moving up and down stairs, carrying, lifting and stooping are injurious, because indirectly they push the uterus further down in the pelvis. The contraction of the recti muscles attendant on such exertions have this effect, and, when the uterus has an inclination forward, this downward pressure increases it.

Further, means must be taken to maintain the upper part of the uterus in its proper position, and to support it in this position in such a manner as to obviate the effects of downward pressure, and the whole secret of success in the treatment is the adoption of means calculated to ensure the maintenance of the upper part of the uterus in its proper relative position.

One of the most effective means for restoring the shape of the uterus in cases of anteflexion is the use of the sound. The sound should be introduced into the uterus with the concavity directed forwards. It should then be very gently turned round, so as to bend the uterus a little backwards. Prior to introduction the sound should be very slightly bent only, in fact it should be nearly straight. This is one method of treatment. This operation may be repeated according to circumstances, once in two or three days, the use of the sound extending over some considerable time in a chronic case. In certain cases the use of the sound is not necessary at all. But in chronic cases the use of the sound is essential to the treatment being conducted successfully. In an average kind of case by the combined use of the sound and the cradle pessary, presently to be described, we are able to effect all that is desired, these measures being conjoined with the thorough rest before insisted on.

The '*Cradle*' *Pessary*. In the last edition of this work I described an instrument I had just invented for the treatment of cases of anteversion and anteflexion. I have since given it the name 'cradle' pessary, and it perfectly answers the purpose of supporting the uterus in the state of rest required. The cradle pessary, as it has now been perfected, is a most valuable instrument for keeping the uterus at rest and preventing any downward movement of the fundus of the uterus, and the experience of the last four years, during which time I have used it in public and private practice in a multitude of cases, enables me to speak with the greatest confidence as to its value. Fig. 53 represents the instrument in outline, and shows its relations to the uterus.

Fig. 53.

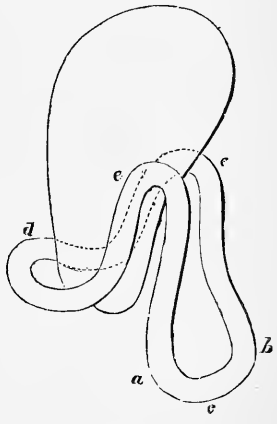
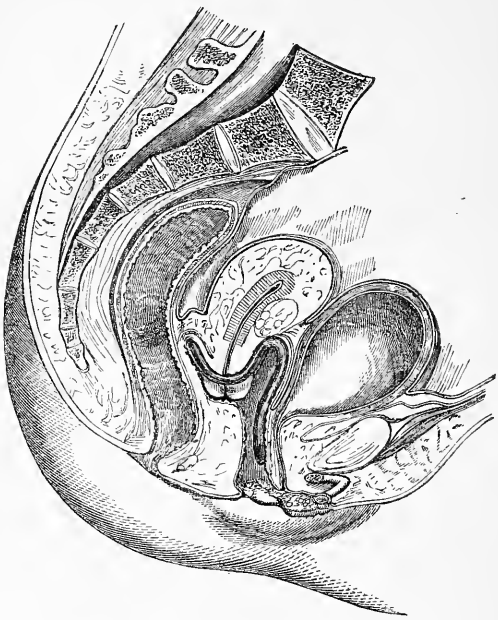


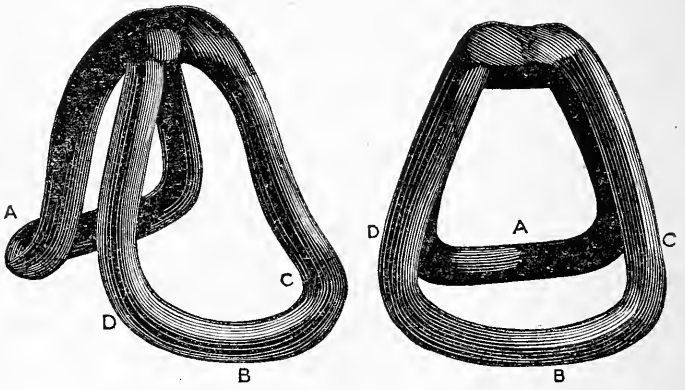
Fig. 54 is a sectional representation of the uterus with the cradle pessary *in situ*. [In the anterior wall of the uterus is

Fig. 54.



represented also a small fibroid tumour.] The ordinary ring pessary is used for the purpose of making the cradle pessary, the ring being bent into the proper shape, and the size of the in-

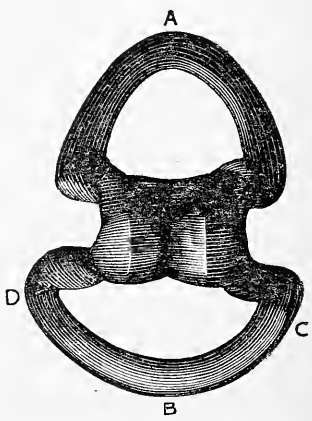
Fig. 55.*



* Fig. 55 represents two views of the same instrument, the cradle pessary of improved form. From a photograph. The smaller end (A) is intended for the upper extremity of the vagina ; (B) the wider one for the lower end of the vaginal canal.

strument being adapted to the requirements of the patient. The crutch-shaped portion of the instrument presses upwards the anterior vaginal wall and prevents the uterus from falling forwards. Of late I have added a cross-bar to the instrument, which prevents the cervix being caught between the two projecting arms of the instrument, and makes its use more tolerable in certain cases. Ordinarily the more simple instrument answers very well, but this cradle with cross-bar is preferable in some instances. The accompanying drawings (figs. 55 and 56) represent the cradle pessary with cross-bar from various points of view. The size here shown is made from ring No. $3\frac{1}{2}$; which is the size frequently required.

Fig. 56.*



Generally it will be found that from a ring known as No. 3 or No. $3\frac{1}{2}$ a cradle pessary can be made adapted for chronic cases. If we have to deal with a case in which the hymen is intact, or where the vagina is narrow, we have to provide an instrument made from No. 2 ring, and made proportionately narrow from C to D. The secret of success is in the adaptation of the size of the cradle to the capacity and peculiarities of the vagina, but it will mostly be found that the typical *shape* represented in figs. 55 and 56 cannot be widely departed from. When the patient has had many children, and where the vagina is capacious, we sometimes require the instrument to be much larger, and a cradle pessary made from No. 4 or No. 5 may be required in certain cases. In cases where the perineum has been partly or wholly destroyed, the width below from C to D must be proportionately increased or the instrument will not be retained in the vagina.

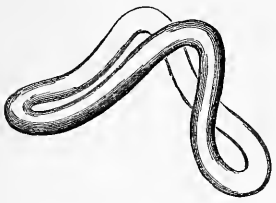
The cradle pessary can be worn for a period of several months without any difficulty, and in long-standing cases a year may be required to perfect the cure, during which time the instrument, if properly constructed and adapted, may not require to be changed. As a matter of fact many of my patients have worn the instrument for periods of many months with very little necessity for attention otherwise of any kind. There are, however, certain diffi-

* Fig. 56 represents another view, from above, of the cradle pessary, shown in Fig. 55. From a photograph.

culties connected with the wearing of this instrument. It sometimes happens that the os uteri and cervix uteri become puffy and swollen from being too closely encircled by the ring formed by the upper part of the instrument; perhaps in one case in twenty this is liable to happen. The instrument must be a little widened to obviate that tendency. Undue compression of the cervix so produced I have known to occasion troublesome sickness. Pain is, of course, liable to be produced, when the instrument does not fit well, or when the pressure produced is too great, or when the patient moves about too much. These are the only inconveniences which I am aware of attaching to its employment. It does not interfere with menstruation, nor with the action of the bowels, but it confers that condition upon the uterus which is so necessary for successful treatment, namely, rest! Repeatedly, also, it may be mentioned, patients have become pregnant while wearing the instrument.

Treatment of Antero-lateral Flexion.—It sometimes happens that the fundus is markedly inclined to one side. More generally there is, in fact, a very slight inclination to one side or the other. But when this lateral inclination is more decided it is necessary to modify the instrument used to a slight extent. Fig. 57 represents a cradle pessary with one of the upright arms projecting a little more back than the other. Such a modification of the instrument enables us to deal with these exceptional cases.

Fig. 57.*



The Method of Introduction.—One end of the pessary A is rather narrower than the other. This narrow portion A, in figs. 55 and 56, is introduced first, and having been pushed inwards a short distance, pressure is then made on the saddle part of the instrument, which thus passes close under the meatus urinarius and shoots into its place. The lower end B of the instrument is then gently pushed a little upwards, and the operation is completed. It takes its position naturally and easily. Needless to say, the object and aim of the instrument must be understood before it is inserted, or the part which is intended to go before the os uteri may be placed behind it. The upright projecting saddle part must look upwards and forwards.

* Fig. 57 represents the shape, not the *size*, of the instrument described in the text.

One precaution is essential. In bending the ring, in order to give it the proper shape, the gutta percha is liable to crack; hence the part which has to be most acutely bent should always be annealed in the flame of a spirit lamp and smoothed over by the wetted finger. The cradle pessary should be made of very good gutta percha, to avoid this cracking and consequent exposure of the copper wire within. This instrument might be made, of course, of other more durable materials; the only difficulty in the way of this is the fact that different cases require different sizes, and sometimes peculiar shapes, in order to answer the purpose thoroughly well, for the instrument to be used must be adapted to the condition of the patient.

The combined use of the sound and the cradle pessary is to be recommended in the majority of chronic cases,—the sound occasionally, the cradle pessary worn incessantly. After a time the uterus takes a new shape, in obedience to the pressure put upon it.

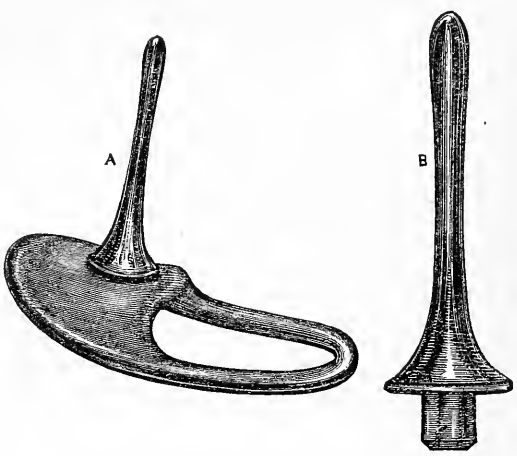
I have hitherto spoken of cases in which the difficulty in treatment is of an average amount. Where, however, the uterus has been anteflexed for years, and when it has become very hard and firm, when the cervical canal is narrow, and when there is much dysmenorrhœa,—under these circumstances it is sometimes essential to treat the case in a different way. Under these circumstances it will be sometimes advisable, in order to arrive at a conclusion with a reasonable degree of promptitude, to perform an operation on the uterus. The operation which is to be recommended under these circumstances consists of incising the cervical canal, and enlarging it by that means. The advantages of this method of treatment are considerable in the particular cases alluded to.

The operation necessary is precisely similar to that described in the chapter on dysmenorrhœa. (See Dysmenorrhœa.) In regard to the advantages of it, as regards its effects in curing the flexion, they are great, for the slight exudation following the incision of the cervix probably acts beneficially in setting the uterus in a better shape, which can be subsequently maintained in other ways. Of course the operation may be required in order to cure the dysmenorrhœa itself. The procedures subsequent to an operation so performed will depend upon circumstances. We may either introduce an ebonite stem, or limit the treatment to the use of the sound, taking care, of course, to keep the uterus at rest by means of the cradle pessary before mentioned.

Another method of treating these cases may be adopted, and that is, instead of incising the cervix, to dilate it, which may be done by means of laminaria or other tents. A small tent introduced into the uterus, and allowed to remain there six or eight hours expands the cervix. This process repeated some few times, and using a larger tent each time, is useful in obtaining an enlargement of the cervical canal, and thus aids in the restoration of the uterus to its proper shape; but the effect must be kept up by the cradle pessary, or the bend quickly recurs.

Use of the Stem Pessary.—The cervix must be generally prepared by dilatation for the reception of this instrument. The

Fig. 58.*



stem pessaries which have been generally used are in my opinion too long, and are hence liable to irritate the uterus. The stem pessary here recommended is half an inch shorter than those which have been generally employed. Fig. 58 shows at B the instrument generally applicable, which is about $1\frac{1}{2}$ inch in length, and I have very rarely found it to produce irritation. Unless the canal remains pretty large it is generally better not to allow it to be worn during the menstrual periods. The provision for retaining this stem in the uterus requires special mention. Unless proper means are adopted the stem is never retained in the uterus. Fig. 58 shows a contrivance for retaining the stem in

* In fig. 58 are shown, B, the stem described in the text, the actual size; at A is shown, reduced in size, the stem with its supporting disc.

the uterus, consisting of an oval disc of gutta percha, or copper wire covered by gutta percha. The ring pessaries are readily converted into such supporting discs. The size of the disc varies, but the size commonly required measures $1\frac{3}{8}$ by $2\frac{3}{8}$ as the outside measurement. Sometimes the supporting disc must be a little larger than this. The general shape of the disc is shown in fig. 58; the lower part should be a little wider across than the upper. The disc is of course perforated, the size of the perforation being adapted to the size of that part of the stem which is designed to correspond therewith. The whole instrument, stem and supporting disc, is thus in two parts, and by a little management they can be inserted. This arrangement answers the purpose very well. It is better in some cases to have the connection between the stem and disc a little loose. Sometimes I have soldered the two parts together, but the introduction of the instrument is thereby much more difficult. This method of supporting the stem *in utero* answers well, and in suitable cases is a very valuable means of permanently straightening the uterus. While the instrument is being worn it is necessary that the patient should keep very quiet, and avoid standing and motions of all kinds.

Use of the Air-ball Pessary.—When the case has been cured, up to a certain point, it is sometimes advisable to employ an air-ball pessary instead of the cradle pessary in supporting the uterus. This air-ball pessary is to be worn whenever the patient is about to take any unusual exertion, as a long walk. At first it should be worn every day, and removed at night. The instrument for this purpose is a simple air-ball pessary, which can be managed by the patient herself. It is introduced when in a collapsed state, and when in the vagina it is injected full of air by means of an air-syringe. It can be easily removed by letting the air out. Its use offers a safeguard during exertion, and until the parts become consolidated. There are cases in which this method of treatment is alone sufficient to cure anteflexion ; but it is not, alone and unassisted, capable of restoring the uterus to its proper shape in a long-standing case.

Treatment of Anteflexion in connection with Pregnancy.—The wearing of the cradle pessary is frequently necessary to procure pregnancy. In other cases the instrument is necessary in order to prevent miscarriage. In several cases I have prevented miscarriages by the use of the cradle pessary. It should be worn for the first three-and-a-half months, and after that time it should

be removed. With respect to the treatment of anteflexion after pregnancy, it is most important to observe certain rules and regulations. Chronic anteflexion almost invariably returns after pregnancy, and especial caution is therefore required. In the first place the patient must lie on the back an unusually long time—four or five weeks.* In the second place, upon an examination, if there is any tendency of the uterus to fall forward, it will be advisable to give the patient a cradle pessary to wear for a month or two while the uterus is becoming solidified, and while the attachments are becoming firm. In this manner the recurrence of the affection is prevented.

* Why not, it may be asked, save the patient from the necessity for this long rest by the use of the cradle pessary during this time? In truth, there is no reason why its use should not be begun ten or twelve days after the labour is over.

CHAPTER XII.

CHRONIC INVERSION OF THE UTERUS.

Chronic Inversion of the Uterus.—Causes, Effects, and Varieties.
Diagnosis.
Treatment.—Reduction by systematic and continuous Pressure aided by Anæsthesia —Treatment by Excision.

We are here concerned only with cases of chronic inversion of the uterus. The consideration of the condition in a recent state belongs to the domain of obstetrics proper.

Inversion of the uterus may occur during, or soon after, parturition, and this is its most frequent cause; but it may occur also in connection with the presence of fibroid growths—polypi—attached to the internal surface of the organ, and thereby distending it. It may be partial or complete. In its complete form it may arise after parturition; polypi generally occasion an incomplete form of the displacement. When there is complete inversion, the whole organ is turned inside out; the uterus lies wholly in the vaginal canal, and in recent cases projects considerably outside the vulva. When occurring in connection with parturition, the uterus gradually diminishes in size, though less quickly than under ordinary circumstances, and at the end of a few months the uterus may be wholly within the vagina, but the inversion still present in its complete form.

The symptoms and effects of inversion of the uterus are generally of a striking character, but not invariably so. Hæmorrhages, and almost incessant loss of blood in smaller quantity, are usually observed. Pains of a dragging character, and a sense of great discomfort more or less continuous, are experienced by the patient, these effects being not seldom of a very aggravated character.

The patient frequently becomes very anæmic, and there may be great general prostration, breathlessness, and loss of power of locomotion, with œdema of the lower extremities, &c. Chronic

inversion of the uterus may exist for many years; cases of twenty-five or thirty years' duration are well authenticated.

In cases of inversion of the uterus a tumour is felt occupying the vagina, which varies in size according to the degree of the inversion, and the time which has elapsed since the occurrence of the inversion. Thus, if the inversion be recent and complete, the tumour in the vagina may be so large as to project beyond the vulva, but if some weeks have elapsed, it may be no larger than the fist, although still complete. The tumour is smooth, uniform, and no opening is to be detected on the surface. On digital examination, it is found that the vagina terminates above, round the pedicle of the tumour, in a perfect cul-de-sac, and the surface of the tumour is actually continuous with that of the vagina. At the point where the os uteri should be situated this pyriform tumour projects downwards into the vagina. The tumour itself is hard and firm, and resistant, when the inversion has lasted a few weeks. If the patient have been recently delivered, if a tumour has occupied the vagina since delivery, and if, further, it be known that there was no tumour previously, the diagnosis is not usually difficult to establish, provided the inversion be complete. This statement is, however, not quite universally true, for pregnancy may be associated with polypus, and the polypus may be thrust down into the vagina immediately after the expulsion of the child: Gooch and others have related cases of this kind. There is no possibility, in complete inversion, of passing the finger above the pedicle of the tumour, nor can the uterine sound be made to pass in this direction. The symptoms attending the production of inversion during labour are characteristic:—excessive pain—which may, however, be absent—prostration, syncope; the uterine tumour is no longer felt above the pubes; hæmorrhage is usually observed. Inversion may occur just at the end of labour, or a few days after, from incautious exertion on the part of the patient. Inversion of the uterus usually gives rise to frequent and profuse hæmorrhages, together with great discomfort and pain; but it does now and then happen that the symptoms are not so urgent as to attract much attention, until the disease has lasted for some time. That the symptoms and history of the case are not always demonstrative of its true nature, is proved by the fact that inversion of the uterus has been frequently looked upon and treated as polypus.

With reference to *the diagnosis of complete inversion from polypus*: in both cases the tumour is generally more or less

pyriform; in both cases it is hard, resistant, smooth; in both the tumour terminates above by a constricted portion; in both there are hæmorrhage, leucorrhœa, and symptoms produced by pressure on the adjacent viscera; but in the case of inversion, neither the sound or the finger can be passed upwards beyond the pedicle of the tumour, whereas in the case of a polypus projecting down into the vagina from the interior of the uterine cavity, an instrument can be passed into a cavity beyond the neck of the tumour; the neck of the tumour being encircled by the os uteri, the sound can be made to pass into the interior of the uterus. This distinction is not a perfectly reliable one, for there is occasionally a difficulty in detecting the cavity above when it really exists,* and sometimes there is found to be adhesion of the sides of the polypus to the adjacent wall of the vagina or to the interior of the cervix uteri (West, Blundell); and, thirdly, it may happen that the polypus grows from a part of the uterine cavity close to the orifice (Gooch). It is said that in cases of inversion the tumour is very sensible; that this sensibility is wanting in cases of polypus; that the surface of the inverted uterus is rough, whereas the surface of a polypus is smooth; but no reliance can be placed on such supposed distinctions. If an examination be made within a week after the labour, the fact that the normal uterine tumour is absent from the hypogastric region, associated with that of the presence of a rounded firm tumour in the vagina, will demonstrate the nature of the case; at a later period this remark would not hold good, or at least in the same degree. Another mode of examination, enabling us to distinguish between inversion and polypus, is the combined examination by the rectum and by the bladder, i.e. the finger introduced into the rectum and a sound into the bladder, by which means an absence of the body of the uterus from its normal position can be substantiated (Arnott).

In cases of *partial inversion of the uterus*, the difficulties as regards the diagnosis are more considerable than when the inversion is complete. Here the pedicle of the tumour is encircled by the os uteri, as observed when a polypus projects downwards from the uterus into the vagina. In cases of partial inversion, however, the sound cannot be passed so far beyond the encircling band formed by the os uteri as usual, whereas in cases of polypus the cavity may be even longer than ordinary. A complex condition has been now and then observed, in which the diagnostic mark alluded

* See *Lancet*, 1827–28, vol. i. p. 327.

to might fail; that, viz. in which there is a polypus of the uterus forming the lower part of the tumour, this tumour having dragged down the fundus uteri with it and produced partial inversion, where, in fact, the two conditions, polypus of the uterus *and* inversion of the uterus, are associated. Dr. M'Clintock* calls attention to a new diagnostic sign of the presence of inversion. It is this: when the case is one of inversion, on drawing the tumour downwards the lip formed by the os disappears; on ceasing this traction the lip is again evident. A very careful consideration of the previous history, combined with examination of the parts, are necessary to come to a correct conclusion in these doubtful cases. The tumour due to a partially inverted uterus is hard and firm, like a fibrous polypus; the symptoms produced by it are pretty much the same—hæmorrhages, discharges, &c.—but there is more pain, more discomfort to be looked for in the case of inversion than when there is only a polypus present. Again, the double examination by the rectum and bladder is very important in assisting the diagnosis, the more so as in cases of polypus partly projecting from the os—the particular cases, in fact, which most closely simulate this partial inversion of the uterus—the body of the uterus is generally more or less enlarged, owing to the presence of the polypus within it.

TREATMENT.

There has been usually found but little difficulty in replacing an inverted uterus when the condition has been detected at once, as in the process of labour. When, however, the disease is a chronic one, the difficulties to be encountered are great. We must first speak of the treatment of cases of chronic inversion of the uterus of the simple and uncomplicated kind.

Formerly these cases were only treated by excision; the patient was relieved of the tumour and of her troubles by means of the knife, at the expense necessarily of loss of all power of bearing children subsequently, and not unfrequently at the expense of loss of life altogether. Happily art has stepped in to the rescue of these cases. During the last few years, a method has obtained general adoption in the profession, by means of which the normal shape of the uterus is restored, even in long-standing cases. M. Valentin,† in 1847, reduced an inverted uterus after the lapse

* *Op. cit.* p. 91.

† Quoted from *Gaz. Médicale* in Ranking's *Abstract*, vol. vii.

of upwards of a year from the date of its occurrence. The reduction was performed by the aid of the two hands, the left placed over the hypogastric region, the right in the vagina, the tumour being grasped by the finger and thumb of the right hand. These manipulations were performed while the patient was under the influence of ether; and after application of continuous pressure in this way for about ten minutes, the reduction was accomplished, and the patient completely cured. The etherisation in this case enabled the patient to bear the operation, it having been relinquished previously owing to the great pain produced. Mr. Canney,* of Bishops Auckland, reduced a chronic case of inverted uterus of five months' duration, in 1852, under the influence of chloroform, and by manipulations pretty much the same as those described above. M. Barrier's † case, also in 1852, is the next reported, the duration having been considerable. These three cases had escaped my notice in preparing the first edition of this work. Dr. Tyler Smith, ‡ in 1856, successfully reduced an inverted uterus of twelve years' duration after several days' treatment, the uterus being pressed and moulded by the fingers for about ten minutes night and morning. After repeated trials, the cervix uteri, which was firmly contracted round the neck of the projecting tumour, began to yield a little, and the tumour could be slightly sunk in the os. After each operation, a large india-rubber air-pessary was placed in the vagina, and inflated to as great an extent as the patient could bear. The air-pessary was worn, with few exceptions, day and night. 'After more than a week of these proceedings,' says Dr. Tyler Smith, the patient felt a good deal of pain through the whole of one night; and in the morning, when an examination was made, it was discovered that complete reinversion had taken place. A small air-pessary was afterwards worn for a few days, and the recumbent position maintained. Subsequently the patient became pregnant.

Mr. White, of Buffalo, § has reported a case of cure (1858) after fifteen years had elapsed. Dr. West has reported an interesting case of cure after a duration of the inversion of nearly a year. Noeggerath, Dr. M'Clintock, and Dr. Marion Sims have also reported cases of cure.

The principle on which the attempt at reduction should be made in obstinate cases is to maintain a persistent pressure on

* Ranking, vol. xvi. † Ibid.

‡ *Medico-Chir Trans.* vol. xlii. p. 183.

§ 'Report on Inversion of the Uterus,' by Dr. Quackenbush, *Trans. of Med. Soc. of State of New York*, 1859, p. 170.

the inverted part, or rather a combination of moulding and pressure by means of the fingers and thumb introduced into the vagina, counter-pressure being applied externally, and when this does not succeed to apply a more continuous but less forcible pressure by means of an india-rubber air-pessary. The part which has been inverted last should be pushed upwards first, as Dr. M'Clintock has very properly remarked. The uterus is capable of being readily moulded, and on this property of the uterus our attempts are to be based; sudden, too forcible, and too abrupt manipulations must be avoided. Chloroform or ether, as the reports show, are invaluable adjuncts in the treatment.

Dr. Marion Sims proposed in difficult cases to make a vertical incision through the uterine tissues on each side, at the part corresponding to the os uteri, so as to allow more easily of the reduction of the tumour. Dr. Barnes has performed an operation on this principle successfully. He relates a case * of some months' standing where continuous pressure had failed. He drew down the uterus and made three vertical incisions. The uterus was at once reduced by taxis and the case did well. He recommends that in future two incisions only should be made, and that continuous elastic pressure (by water bags) should be employed to restore the inverted uterus.

Dr. Thomas, of New York, † has performed a remarkable operation in an obstinate case. He cut into the abdomen, dilated the cul-de-sac of the uterus from within the abdomen, by a steel dilator, and thus reduced the inversion by the taxis. Recovery followed. Previously the pressure and incision method had failed. In three other cases, by ingenious variations of the pressure treatment, Dr. Thomas succeeded in restoring the uterus.

Excision.—Dr. M'Clintock states that in his hands the plan above mentioned has occasionally failed, and in such cases he has excised the inverted fundus, and in the two cases so excised recovery followed; but the operation of excision has not had so favourable a result when performed by others. Excision is an operation which, in face of all that has been effected by persevering and repeated attempts at reinversion, could hardly be justifiable, except in very extreme cases. Dr. M'Clintock's mode of performing excision is to place a lighted ligature firmly round the pedicle for two or three days, and then to complete the removal by means of the écraseur.

* *Med. Chir. Trans.* vol. lii.

† *New Syd. Soc. Year Book* for 1869-70, p. 376.

The treatment of cases of inversion of the uterus associated with polypus of the uterus requires a few words. When the polypus has a large basis of attachment, the fundus may be so drawn

Fig. 59.*

downwards that what appears to be the pedicle of the polypus is really the uterus itself. Thus a specimen was exhibited at the Pathological Society, and referred to Dr. Marion Sims, Dr. John Ogle, and myself for examination, in which such a tumour had been excised, and a circular piece comprising the fundus uteri had been removed with it.† The case shows the necessity for great caution in excising tumours projecting through the os uteri. In most cases where a polypus projects into the vagina from the uterus, it draws down the wall of the uterus a little, and when the pedicle is broad this partial inversion of the uterus is more likely to be extensive. The use of the sound would in such cases give valuable information.

* Fig. 59, from a preparation in University College Museum, represents inversion associated with a large polypoid tumour. The tumour has produced complete inversion of the uterus and of the vagina.

† *Trans. of Pathological Society*, vol. xvi. p. 210.

CHAPTER XIII.

PROLAPSUS OF THE UTERUS.

General Remarks on the Pathology of the Subject—Mechanism by which the Uterus is kept in its place—The various Conditions present in Cases of Prolapsus—Illustrations of various Conditions and Complications—Mechanism of the Process—Relation to Cystocele, Rectocele, and Flexions—Hypertrophic Elongation of the Cervix and its Varieties—Symptoms and Progress of Prolapsus.

Diagnosis.

Treatment.—Must be adapted to the Peculiarities of the Case—Treatment of Prolapsus from Hypertrophy of the Cervix—Excision of the Part—Other Forms of Prolapsus—Measures directed, 1. To the Condition of the Uterus; 2. To the Condition of the Uterine Supports—Artificial Means for Maintaining the Uterus in its proper Place in the Pelvis, by Pessaries, by external Appliances, by Constriction of the Vaginal Aperture, or the Canal itself—Description of various operative Procedures.

Prolapsus, or falling of the womb, is an affection to which women are in one form or other exceedingly liable, and it is one which is not unfrequently productive of very much inconvenience and distress. Intimately connected as the uterus is with the adjacent organs, its displacement downwards is almost necessarily attended with more or less displacement of these organs also. Prolapsus of the uterus, then, is rarely a simple affection; and, for this reason, it will be convenient to consider together the various displacements associated more or less frequently with it, viz., prolapsus of the uterus, prolapsus of the bladder (cystocele), prolapsus of the vagina, and prolapsus of the rectum through the vagina (rectocele).

The term 'prolapsus' is in this country generally used to designate all grades of the displacement. In America it appears that 'prolapsus' means falling of the womb within the vagina, while 'procidentia' is used to designate its appearance externally to the vaginal aperture. In this place one term—prolapsus—will be applied to both these conditions.

The anatomical relations and connections of the uterus are of the utmost importance in all that concerns a right understanding of the subject of prolapsus. The uterus is supported by a com-

plex mechanism, the various parts of which are mutually dependent, and a failure or weakening of one leads to derangement of the others. It frequently requires no little attention to ascertain where the 'break-down,' literally as well as figuratively, first happened; but unless the investigation be successful, we can have no true basis for our curative efforts.

Natural Supports of the Uterus.—The *peritoneum* serves little purpose in restraining the downward movement of the uterus. The *round ligament* has an influence which is exerted for the most part in restraining the movement of the fundus backwards. Still in a case where the uterus had descended a little, it would aid in preventing further descent. The *utero-sacral ligaments* are so placed as directly to prevent falling of the uterus. They are firm, fibrous bands, passing one on each side straight between the cervix uteri and the sacrum. Dr. Farre justly drew attention to the importance of these ligaments. The *broad ligaments*—not, properly speaking, ligaments, being simply the mesentery of the Fallopian tubes—have, in the early stage of prolapsus, little restraining effect as regards descent of the uterus, but they would necessarily assist in checking its further progress downwards. The *utero-vesical ligaments* connect the uterus very closely with the bladder, and supposing the distended bladder to be fixed, it would be almost impossible for the uterus to descend below its proper level in the pelvis. The bladder, however, is not so fixed. A movement of the whole bladder downwards necessarily carries with it the uterus, and correspondingly the uterus cannot descend without carrying with it that portion of the bladder with which it is connected, viz. the posterior part. Lastly, the *general connections* of the uterus with the adjacent parts, and constituted by a very considerable quantity of blood-vessels and connective tissue, form, as Dr. Savage * has shown, a very important additional apparatus for restraining undue mobility of the uterus. Dr. West considers that the canal of the vagina contributes very much to supporting the uterus in proper position; it is manifest that a relaxed, loose state of this canal must favour the occurrence of prolapsus.

In his eleventh plate † Dr. Savage has delineated experimental observations (*post mortem*) on the ligaments of the uterus and the resistance they offer to descent of the organ. Moderate traction on the uterine cervix by a vulsellum was found to compress the

* *Illustrations of the Surgery of the Female Generative Organs*, 1863. Plate IX.

† *Op. cit.*

bladder against the pelvis, to straighten and put on the stretch the utero-sacral ligaments, to curve but not to stretch, the round ligament. Cutting through the utero-sacral ligaments allowed the uterus to descend still lower, until the os uteri was just outside the vagina: the results were that the bladder was drawn down closely following the uterus, the rectum not disturbed, the broad ligament now for the first time put on the stretch. Dividing the broad ligament allowed of the further descent of the uterus to the extent of an inch; but the sub-peritoneal pelvic cellular tissue, particularly where it surrounded the uterine blood-vessels, and where it was strengthened by additional trabecular filaments, was found to restrain further descent of the organ. Complete prolapsus was produced on the yielding of the pelvic reflexions of the broad ligament. The round ligament was last put on the stretch.

The foregoing suggests valuable inferences regarding the controlling powers *quoad* simple descent of the uterus; but it must be recollected in applying these inferences that they suppose a preexistent normal condition (and I would include shape) of the uterus itself.

In point of fact prolapsus of the uterus is a complex event. It is impossible, moreover, to consider prolapsus apart and separate from the subject of flexions; from an etiological point of view at least. I have already discussed, under the head of Flexions, the mechanism of those changes in the shape of the organ, and the relation of the uterine ligaments to flexions. We have, therefore, now, amongst other things, to discuss the relation between flexions and prolapsus in its various forms and degrees.

There are two principal elements in existence in every case of prolapsus, sometimes separately, sometimes conjointly:

These are: 1. Increased weight or altered shape of the uterus. 2. Impairment or destruction of the supporting structures below the uterus. The foregoing classification will not include of course every imaginable case. For instance hypertrophic growths downwards from the cervix uteri.

The relation between the various causal elements in ordinary cases is most easily illustrated by descriptions of actual cases.

Thus: *a*. During a labour the perineum is torn, the vaginal aperture increased in size; the floor of the bladder, not so well supported as it should be, comes to occupy a position nearer the ostium vaginæ than usual. Slight exertion increases this descent

of the bladder, the uterus follows it, and soon comes to take a position lower in the pelvis than usual.

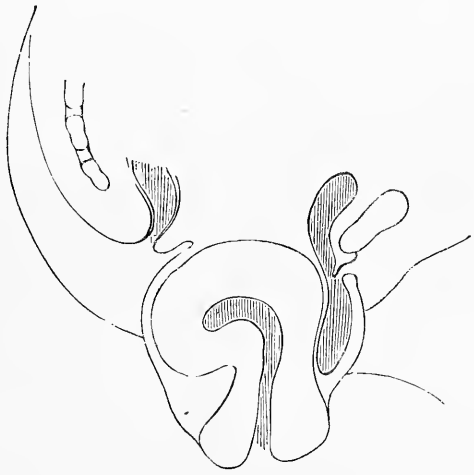
Or, *b*. Concurrently with such enlarged perineal aperture the patient is the subject of defective involution of the uterus. She moves about too soon after labour, the uterus becomes first a little anteverted, then anteflexed; and the bladder less supported than usual below and more pressed upon from above, gives way. The result is perhaps confirmed anteflexion and cystocele.

A further stage may be witnessed, after the lapse of many years as a rule, viz. complete descent of the whole uterus external to the vulva.

Or, *c*. The patient is unmarried. Anteflexion of the uterus exists. The bladder is slowly pushed downwards, and spite of the uninjured ostium vaginæ is gradually protruded.

Or, *d*. The patient has shortly after labour acquired a retroflexion of the uterus. The labour has been attended with laceration of the perineum also. Soon the uterus falls lower in the pelvis, the retroflexion becoming at the same time intensified, and first of all the posterior vaginal wall is protruded at the

Fig. 60.*



vaginal aperture (rectocele), then follows the fundus of the uterus. At a later stage of the affection the whole uterus may pass outside the vulva, remaining still however retroflexed. See fig. 60.

* Fig. 60 represents a case in University College Hospital, æt. 42. The patient had had two children—the last nineteen years ago. The case was cured by operation.

Or, *e*. The lower part of the uterus becomes elongated, the effect being that the cervix of the uterus finally becomes external to the vulva, bringing with it the bladder more or less completely. These constitute a class by themselves, and will be presently more fully described.

These illustrations might be easily increased in number.

The foregoing illustrations are put forward with the view of showing the various 'first steps,' as they may be termed, towards prolapsus. *Occupation* and *age* are two elements of considerable importance in altering the character of the prolapsus in different cases. An occupation involving much standing is certainly provocative of its occurrence in a very marked degree. And as age advances, if the quantity of fat in the body diminishes, the uterus is more apt to descend than it was before.

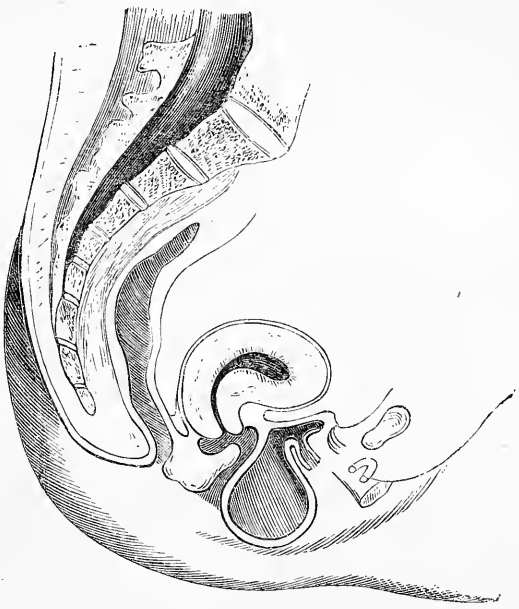
Violent strains are evidently capable of producing prolapsus instantaneously, even when the parts are previously healthy and parturition has not occurred; but more ordinarily the action of strains is more indirect, the first effect being to produce a flexion, which flexion is the starting point, ending finally in prolapsus. Flexions bring about prolapsus very frequently in the following manner:—the process of defæcation is impeded by the flexion; the patient finds it necessary to strain very much to procure an evacuation; the whole pelvic contents are thus pressed downwards; the supports of the uterus stretched; the flexion intensified; and, by-and-by, the uterus itself escapes from the vulva.

Cystocele is observed, as already hinted at, chiefly in association with a ruptured perineum and an anteflexed uterus, but it may occur apart from such injury of perineum, and in women who have had no children. Here the tumour which forms at and protrudes from the vulva is small and readily reduced. Cystocele is also witnessed when the cervix uteri descends externally. This remark applies to that part of the cervix which is connected so intimately with the bladder, and when this part of the cervix descends the bladder must come with it. When the whole uterus is outside the vulva, there must therefore be a considerable portion of the bladder protruded externally. But when the part of the cervix *below* the vaginal reflexion is, as sometimes happens, alone hypertrophied, and projects downwards, perhaps in a conical form, through the vulva, there is, under these circumstances, no necessity for a simultaneous descent of the bladder, and such cases are not usually complicated with cystocele.

Cystocele, though ordinarily not attended with more than dis-

comfort when slight in degree, is liable to become a condition of torture to the patient. Not long since a married woman just over forty, who had never had children, presented herself for treatment at University College Hospital. There was a tumour the size of

Fig. 61.*

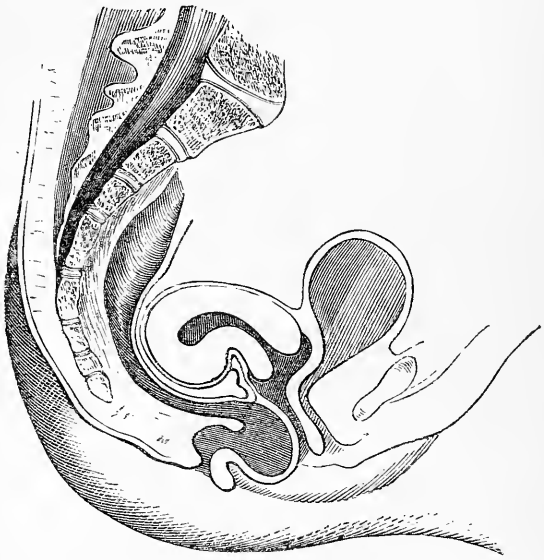


one end of a hen's egg protruding, and composed of the bladder. It was sensitive to such a degree that the slightest touch gave excruciating pain. The tumour could not be kept up, intercourse had not been possible for years, and various means had been tried to relieve her; amongst other things, an operation consisting of removal of an area of vaginal mucous membrane had been unavailingly performed. There I found the affection dependent on long-standing anteflexion of the uterus. The case was finally and completely cured by very considerably narrowing the vaginal aperture, but means were at the same time taken to prevent the descent of the fundus uteri anteriorly, which had evidently been the original cause of the mischief.

* Fig. 61 represents anteflexion associated with cystocele. The case is the one described in the text, where there was excessive hyperæsthesia of the prolapsed, thickened, and hypertrophied bladder.

Rectocele, and its relations to prolapsus, constitutes an important subject. Rectocele, which is of course a simple projection of a loop of the rectum through a defective vaginal outlet, generally arises from laceration of the perineum. It by no means always occurs in cases of lacerated perineum, and it is in fact rather rare by itself. It varies in degree, and I have generally seen it associated with retroflexion of the uterus, though it is not by any means the fact that cases of retroflexion are generally complicated with rectocele. In some instances the affection is one of the most painful character possible; the straining at stool required to evacuate the rectum is sometimes severe, and, when long continued, I have found it associated with an ulcer of the rectum, bleeding

Fig. 62 *



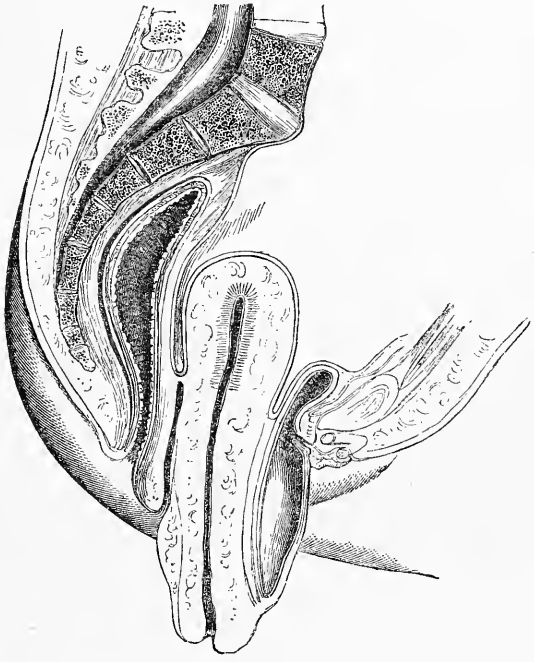
on the slightest irritation, and painful when touched to an extreme degree. The nature of these particular cases is liable to be misunderstood, but the explanation seems obvious enough. It is that the bend in the lower part of the rectum prevents the passage of the fæces, which are impelled, day after day and month after month, with great effort against that part of the rectum where the

* Fig. 62 represents the condition described in the text, the subject of which was a lady, æt. 42, who had been suffering some years: the uterus was affected with chronic retroflexion. The rectum is represented in the condition it always assumed in the act of straining.

bend is, the result being to produce the ulceration, the bleeding, and other grave symptoms, sometimes to such a degree as to compel patients the subjects of them to declare that life is not worth having at such a price. In some cases, on the contrary, the inconvenience sustained from rectocele is less marked.

Hypertrophy of the uterus, and its connection with prolapsus, is a subject requiring a discussion by itself. Huguier,* in 1859, described and figured several cases designated as cases of hypertrophic elongation of the cervix uteri; and his researches have since led to a more accurate discrimination of the varying conditions met with in prolapsus.

Fig. 63.†



Following his classification, we have cases of: 1. Hypertrophic elongation of the part of the cervix above the vaginal reflection.

* *Mém. de l'Académ. Imp. de Méd.*, tom. xxiii.

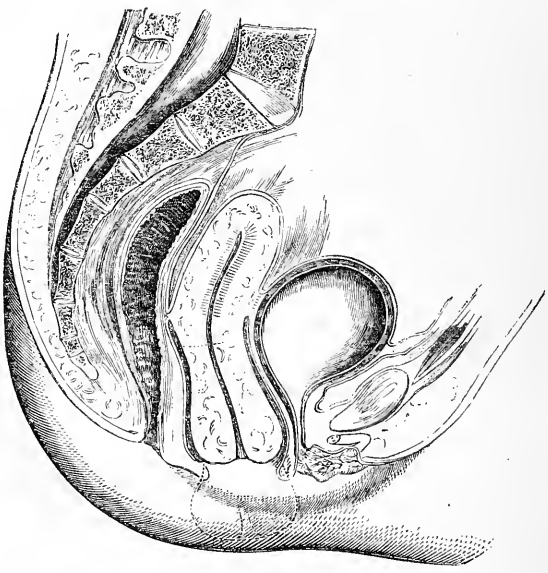
† Fig. 63 represents a case of supra-vaginal hypertrophy of the cervix, the subject of which was a married woman, æt. 47. She had suffered from prolapsus for two years, and had been obliged to wear a box-wood pessary $3\frac{3}{4}$ inches in diameter to keep the uterus up. In Huguier's memoir similar cases will be found delineated.

2. Cases of hypertrophic elongation of the infra-vaginal portion of the cervix. In both these cases the prolapsus which may occur is considerable; but in the first case the bladder is of necessity prolapsed together with the tumour, while in the second the bladder is not necessarily disturbed.

In both classes of cases the fundus uteri may remain in its proper position in the pelvis, and it is obvious that, if there be still a considerable prolapsus, the uterine canal must be enormously elongated. So in point of fact it is, and the distance, as measured by the sound, may be found to be as much as four inches from the os to the fundus uteri; in extreme cases more than this.

The cases of supra-vaginal hypertrophy are met with chiefly in laundresses and cooks, whose occupations involve long standing. The mechanism of the occurrence of this peculiar elongation of the cervix is curious. It would appear that the elongation is due to the dragging of the vaginal portion on the supra-vaginal portion of the cervix, in consequence of which the organ becomes stretched. The bladder very probably descends first in these

Fig. 64.

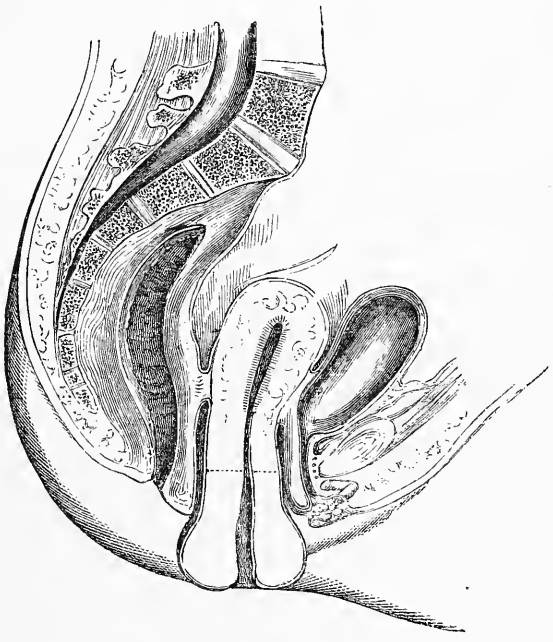


cases, either because the perineum is a little deficient, or because the fundus is inclined forwards, and the effect of the descent of the bladder is that the cervix, which is intimately adherent to the bladder, descends with it, the result being elongation of the cervix.

This mechanism implies a fixation of the upper part of the uterus. In some cases the weight of the vaginal part of the cervix alone appears enough to determine this hypertrophic elongation, when the patient has been subjected to the influences of prolonged standing exertion.

We meet with all gradations of the affection. The accompanying figures represent actual cases. In fig. 64 we have simple hypertrophic elongation of the infra-vaginal portion in a young woman. In fig. 65 is shown elongation of the infra-vaginal portion from a woman who had had children. In fig. 66 we have hypertrophic elongation of the same portion in association with retroflexion, a rare combination.

Fig. 65.



I have seen cases in which the external tumour constituted by the prolapsed organs has been as large as the fœtal head. Under these circumstances there is great thickening of the cellular tissue around the uterus. The organ itself is greatly thickened and hypertrophied laterally as well as longitudinally, and in some cases, together with the bladder and uterus, certain coils of the intestine pass downwards and help to enlarge the tumour.

Huguier's statements as to the frequency of hypertrophic elongation of the cervix are not borne out by my own experience. Whether it be that there is a difference between London and Paris or not I cannot say, but certainly the number of cases of the kind described by him has not in my own hospital experience proved to be so great as I had been led to anticipate some years ago. In other respects, as regards the collateral conditions present in these particular cases Huguier's account has seemed to be exact.

The foregoing represent, regarding prolapsus generally, the more recent generalisations I have been led to adopt. The very great importance of flexions, as in very many instances, being the starting point of the displacement is a matter which it seems desirable to make prominent.

Various secondary effects result from prolapsus. Thus in cases of cystocele the bladder is evacuated with difficulty, retention of a small portion of urine is apt to occur, and chronic cystitis may be added as a complication. The uterus itself, when prolapsed, often becomes ulcerated and excoriated, broad patches, the size of the palm of the hand, raw and bleeding on the slightest touch, are observed round the os uteri, these ulcerations being produced by the friction of the tumour against the thighs. The tumour itself from long exposure becomes sometimes hard and leathery to the touch, the inverted vaginal mucous membrane losing the characters of a mucous membrane and looking more like the adjacent skin. The discomforts connected with defæcation are great and, as already stated, in the case of rectocele they may themselves become actually torturing. Needless to say the general discomfort induced by the presence of a tumour at the vulva, changing in size from time to time, impeding locomotion, distressing the patient by giving rise to profuse leucorrhœa, occasional losses of blood, and in many other ways—all these constitute grave ailments.

Lastly, in some cases, the tumour may be so large and so much swollen that it becomes actually strangulated and mortification sets in; again, inflammatory adhesions may occur to such a degree round the pedicle of the tumour that its return is found difficult, and in a few cases impossible.

The *Clinical* aspects of prolapsus of the uterus will be sufficiently indicated in the following table, in which are set forth the main particulars of cases observed at University College Hospital during a period of over four years.

Cases of Prolapsus of the Uterus.

(*University College Hospital.* 1865-1869.)

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
21	M. S.	M.	1	7 months old. Prolapsus of bladder, size of egg. Uterus large.
22	M. A. A.	S.		Hypertrophic elongation of cervix and prolapsus. Operation in Hospital.
23	E. G.	S.		Slight prolapsus. Gravid.
24	M. B.	M.	0	Married 4 years. Prolapsus 3 years, size of egg. Large uterus. Elongation of cervix. Occupation, ironer.
25	C. B.	M.	2	Prolapsus and pregnancy.
25	S. H.	M.	1	8 months old. Prolapsus and retroversion of uterus. Laceration of perineum. Gravid 6 weeks.
25	A. R.	M.	1	3 months old. Prolapsus temporary, size of fist after walking.
26	M. H.	M.	2	Last 2 months. Slight prolapsus.
26	J. W.	M.	2	Last 8 months. Had prolapsus since 12 years of age, due to lifting corn sacks. Uterus low down and pregnant 4 months. (Ring pessary.)
27	E. W.	M.	5	A miscarriage 2 years ago. Prolapsus 9 years, size of fist. Uterus prolapsed. Vagina entirely prolapsed.
28	H. G.	S.		Slight prolapsus for 2 months. Emaciation.
28	E. V.	M.	2	Last 5 months. Slight prolapsus of posterior wall of vagina.
30	E. H.	M.	3	Last 6 years. Prolapsus associated with anteversion. (Cradle pessary.)
30	S. M.	M.	2	Last 5 years. Prolapsus 2 years. Anteversion of uterus. Difficult micturition. (Cradle pessary.)
33	G. W.	M.	4	A miscarriage 1 year ago at 4 months. Involuntary micturition 8 months. Hypertrophy and vascularity of os uteri.
33	Mrs. T.	M.	4	Last 4 years. Prolapsus 11 years, size of two fists. Perineum very deficient. Uterus twice proper length. Doubles up when returned.
33	Mrs. P.	M.	3	Last 5 years. Occasional prolapsus.
33	M. A. S.	M.	4	Last 4 months. Prolapsus 3 years. Perineum gone. Uterus anteverted.
34	A. F.	M.	3	Last $1\frac{3}{4}$ year. Anteversion of *gravid* uterus. Prolapsus.
35	C. C.	M.	7	Last 7 months. Prolapsus 11 years. Enormous hypertrophy of cervix. Operation, dissecting out and removing cervix by écraseur in hospital, 1866.
36	S. Mc. D.	M.	4	Last $1\frac{1}{2}$ year. Occasional prolapsus. Great mobility of uterus.
37	A. J.	M.	1	9 years ago. Uterus very mobile. Fundus to be felt anteriorly. Cervix hypertrophied.
38	E.	M.	1	4 years. Prolapsus size of egg. Cervix elongated.
39	Mrs. H.	M.		Prolapsus.
40	A. W.	M.	6	Last 4 years. Miscarriage 2 years ago. Prolapsus.
40	M. P.			Prolapsus.
41	B. B.	M.	8	Last 4 years. Prolapsus several years. Now size of fist.
41	E. S.	M.	4	Prolapsus externally.
41	S. J.	M.	13	Last 2 months. Uterus very mobile.
42	M. H.	S.	2	Last 19 years. Retroflexion and prolapsus of the whole uterus. Operation in hospital.

CASES OF PROLAPSUS OF THE UTERUS.—*Continued.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
42	L L.	M.		Prolapsus of vaginal walls. Pruritus.
42	M. S.			Uterus low.
43	M. P.	M.	4	Last 9 years. Prolapsus size of egg 13 years. Bladder prolapsed.
43	A H.	S.		Hypertrophy and elongation of cervix. Prolapsus 13 months.
43	A. Mc. D.	M.	0	Anteversion. Prolapsus of bladder. Great hyperæsthesia. Operation in University College Hospital. Also under head of 'Anteflexion.'
43	A C.	M.	11	Uterus completely prolapsed. Perineum gone. (Ring.)
44	M. A. B.	M.	5	Prolapsus 14 years. Enormous tumour prolapsed, 5½ and 4 inches in size. Operation in hospital.
44	E. S.	M.	1	Prolapsus 5 months. *Gravid* uterus.
44	C.	M.		Great prolapsus.
44	J. N.	M.	2	Last 10 years. Prolapsus.
45	Mrs. H.	M.	8	Great mobility of uterus.
45	G. J.	M.	2	Last 8 years. Prolapsus and hypertrophy of cervix. Bladder prolapsed.
46	S. T.	W.	0	Slight prolapsus of bladder. Incontinence of urine.
46	M. A. M.	M.		Several children. Last 5 years. Great mobility of uterus. Has had prolapsus of bladder.
46	H. J.	M.	1	23 years old. Prolapsus 2 years, from lifting heavy bedstead. Great prolapsus of uterus and bladder, size of fist. (Ring.)
47	H. F.	M.	1	25 years old. Prolapsus since birth of the child. Worn instrument nearly all this time. Occupation, ironer.
48	J. B.	M.	11	Last 5 years. Prolapsus size of egg. Uterus too long.
48	J. B.	M.	10	Slight prolapsus.
48	E. G.	M.	6	Last 9 years. Rectocele. Size of small fist. With fæcal contents. Is a laundress.
48	M. J.	M.	8	Prolapsus of hypertrophied and elongated uterus, 2 years' duration. Charwoman.
49	L. T.	M.	5	Slight prolapsus.
50	M. H.	M.	0	No external prolapsus. General lowness of uterus.
50	J. T.	M.	0	Some years ago slight prolapsus.
50	E. P	W.	1	27 years old. Severe prolapsus with anteflexion. Operation.
50	H G.	M.	5	Enormous prolapsus, size child's head, for 2 years. Occupation, ironer. Uterus 4 inches long.
51	Mrs. T.	M.	5	Prolapsus for 14 years. Prolapsus of bladder. Uterus low.
51	R.	M.	1	20 years ago. Extreme prolapsus 3 years.
52	C. N.	M	10	Prolapsus for 7 years. Uterus external 2 inches. 4 inches long. Perineum good. (Ring.)
52	E. H.	M.	6	Last 18 years. Bearing-down from lowness of uterus.
52	S. M.			Slight prolapsus.
53	M. C.			Prolapsus 1½ year.
54	S. L.	M.	9	Last 18 years. Prolapsus size of two fists, for some years.
54	S. F.	M.	2	Prolapsus for 20 years. Almost whole of vagina external, and assumed condition of skin. (3 ring.)
55	E. A.	M.	3	Last 16 years. Prolapsus of bladder and uterus, and great enlargement of vulvar aperture. (Ring, which failed.)

CASES OF PROLAPSUS OF THE UTERUS.—*Continued.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
55	Mrs. B.	M.	10	Prolapsus of bladder. 20 years.
56	E. W.	M.	6	Last 19 years. General descent of uterus not external. (1 ring.)
56	M. W.	M.	1	20 years old. Prolapsus 10 years, for which has worn porcelain instrument. Offensive discharge.
56	A. A.	M.	1	39 years ago. Uterus atrophied. No external prolapsus. Washing lately. 1 ring.
57	A. W.	M.	7	Last 14 years. Prolapsus of bladder.
58	C. B.	M.	10	Last 12 years. Prolapsus of bladder. Size of egg.
59	J. K.	M.	9	Has had prolapsus.
59	A. A. A.	M.		Prolapsus. Incontinence of urine.
60	C. W.	M.	1	20 years old. Prolapsus and retroflexion. (2 ring.)
60	M. D.	M.		Several children. Prolapsus 1 year.
60	A. M.	M.	4	Prolapsus not external.
60	N.	M.	1	3 years ago. Prolapsus of bladder.
62	M. A.	M.	1	Formerly prolapsus.
62	H. N.	M.	10	Slight mobility occasionally.
64	J. A.	M.	4	Last 18 years. Bladder prolapsed.
66	R. B.	M.	5	Prolapsus 17 years. Very large size. Prolapsed bladder and uterus. Uterus 4½ inches long.
68	E. G.	M.	3	Mobility of uterus.

The following cases of Prolapsus are also included in the previous Table of cases of Retroflexion (p. 221).

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
30	J. C.	M.	3	Prolapsus. Retroflexion.
32	Mrs. H.	M.	5	Prolapsus. Retroflexion and hypertrophy of uterus.
32	Mrs. T.	M.	3	Prolapsus for 7 years. Retroflexion and prolapsus of whole uterus externally.
37	S. G.	M.	4	Prolapsus of bladder. Retroflexion of uterus.
40	A. G.	M.	7	Prolapsus for 7 years. Retroflexion.
41	S. G.	M.	3	Prolapsus of a slightly retroverted uterus.
50	S. J.	M.	7	Prolapsus. Retroversion.
56	J. M.	M.	4	Prolapsus (and retroflexion) of whole uterus. Operation.
56	H. K.			Prolapsus (and retroflexion) of whole uterus. Operation.

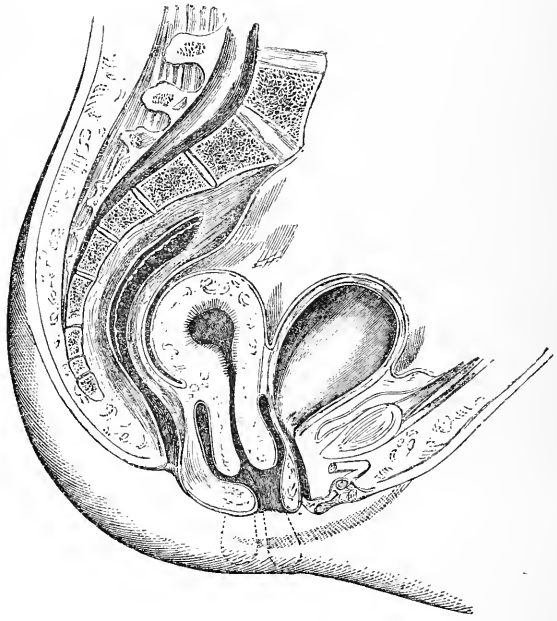
DIAGNOSIS.

All cases of prolapsus uteri have this in common, that the os uteri is the lowest point. In other respects, the variations observed are exceedingly great. In the most simple form of the affection, the cervix uteri is felt rather lower than usual, and the vagina proportionately shortened. In its extreme degree, on the other

hand, the uterus descends so low down as to be almost altogether outside the ostium vaginæ; and in this case the vaginal canal is completely inverted, the bladder is dragged externally also, and the rectum may be displaced in like manner. Thus, in a bad case of prolapsus uteri, we may have combined, descent of the uterus with prolapsus of the bladder and rectum (vaginal cystocele and rectocele).

If we find a conical, firm tumour, smooth on the surface, projecting downwards in the vagina or beyond it, and the os uteri situated at, or close to, its extremity, the case is one of *hypertrophy and elongation of the vaginal portion of the cervix uteri.* With such a condition there is usually found to be no considerable amount of prolapsus of the vagina, and the finger encounters the cul-de-sac of the vagina in about its usual position. See *ante*,

Fig. 66.*

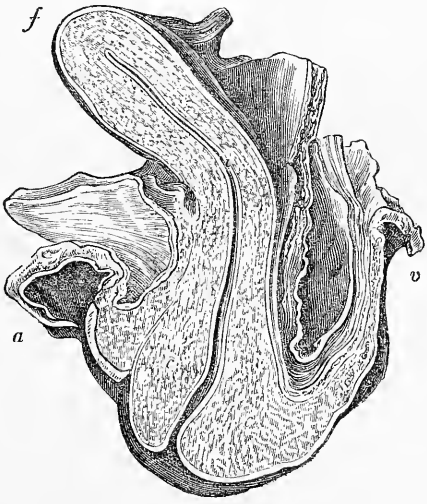


figs. 64 and 65. The shape of the tumour is generally conical, but it may be larger at the extremity than at the base; one portion of the lip may be larger than another, in which case the opening appears to be not quite at the extremity of the growth, and the os

itself may be fissured and ulcerated according to the degree of irritation to which the part is exposed. The general shape, the firmness of the tumour, and the position of the os uteri, sufficiently distinguish it from other tumours occupying the vagina.

Hypertrophy of the Supra-Vaginal Part of the Cervix.—In this class of cases there is prolapsus of the vagina, and the finger cannot, consequently, be introduced as far as usual. The use of the sound will render it evident at once whether the descent of the os uteri, bringing with it the vagina, is due to descent of the whole uterus, or to hypertrophy of the lower part of this organ—the cervix. The attachment of the cervical part of the uterus to the bladder in front are such, that when the cervix is projected downwards the bladder comes with it; the extent of the prolapsus of the bladder is, as a rule, dependent on the degree of the former. Fig. 67 (from Dr. Farre) represents such a condition. See also *ante*, fig. 63. In like manner, the rectum is liable, but in a less degree, to be prolapsed with the lower part of the uterus; and the result is that in cases of extensive prolapsus of the cervix, whether with or without hypertrophy of the part, there is a soft tumour in front—the bladder—and a smaller one behind—the rectum—between

Fig. 67.



which two the os uteri is situated. A combined examination of the rectum by the finger and of the bladder by means of the sound, will determine whether or not the fundus uteri is in its

proper position; the use of the uterine sound gives information of a like character.

True Prolapsus of the whole Uterus may be found associated with ascites, ovarian tumours, or both, or with relaxation of the vaginal structures, consequent on frequent child-bearing.

Prolapsus, complete, or produced by hypertrophy of the supra-vaginal portion of the cervix, could hardly be mistaken for polypus, inversion of the uterus, or large tumours growing from the os uteri, if attention were paid to the position of the os in reference to the body of the tumour. Cases of hypertrophy of the vaginal portion alone might possibly be confounded with a polypus projecting into the vagina from the interior of the uterus, in those instances in which the os uteri is distorted, partially effaced, or so altered as not to be recognised as such, by a casual observer. I have known an instance in which a lady was treated for prolapsus and made to wear a pessary for several months, the tumour being a well-marked specimen of polypus, attached by a slender pedicle to the interior of the cervix uteri.

Prolapsus combined with Pregnancy.—In some rare cases the uterus, although prolapsed, becomes impregnated. It would be a serious mistake to use the sound in such a case, and to induce abortion. It is sufficient here to give this caution on the subject.

TREATMENT OF THE VARIOUS FORMS OF PROLAPSUS.

The various forms of prolapsus of the uterus, vagina, &c., having a different mechanism in different cases, the treatment necessarily varies. Success in treatment cannot be obtained until due importance is attached to the various elements concerned in the production of the prolapsus.

We may consider, in the first place, the treatment of those cases in which there is *hypertrophy of the cervix*—the prolapsus being for the most part due to, or constituted by, this hypertrophy.

(*a*) *Cases of Hypertrophy of the Vaginal Portion alone.*—These form a very small portion of the cases actually observed. In cases of this kind, the only efficient treatment is removal of the hypertrophied cervix.* The mass to be removed has occasionally a length of several inches; and at its superior extremity it may be of considerable girth. The removal may be effected by the

* See figs. 64 and 65.

knife or curved scissors, by the wire or chain écraseur, or by the galvano-caustic apparatus. The knife is the more expeditious and manageable; but the hæmorrhage from the cut surface is often very troublesome. An objection to the écraseur is that, unless the chain fits very closely into the apex of the instrument, there is a liability of drawing into the instrument tissues which ought to be left uninjured. Hence, if the chain écraseur be used, the chain should be applied, not close to the summit of the vagina, but a little below this. The galvano-caustic apparatus has, like the écraseur, the advantage of preventing hæmorrhage. On the whole, the course to be recommended is the use of the knife, or curved scissors, if the neck of the growth be very thick—the actual cautery being ready for use to arrest hæmorrhage, and the use of the chain or wire-rope écraseur (see fig. 68), or the galvano-caustic, when the neck of the tumour is smaller. The actual cautery is of great value in such cases. If, however, there be any objection to the use of the actual cautery, the bleeding may be placed effectually under control by placing a pledget of lint soaked in tincture of sesquichloride of iron on the cut surface, and carefully plugging the vagina by means of the speculum, as in ordinary cases of uterine hæmorrhage. In any case, prior to performing the operation, the tumour should be gently pulled down as far as possible, to facilitate the necessary manipulations. It is a wise precaution to transfix the cervix *above* the line of the contemplated incision, and to pass a stout piece of string through it before performing the excision, for it often happens that the uterus retracts, and bleeding is thereby less under control.

Dr. Marion Sims has practised a modification of this operation. This consists in covering the stump, as it may be termed, of the amputated part, by mucous membrane; the anterior half being covered with mucous membrane previously dissected off, and being made to lap over, as in the flap operation in ordinary amputation; and the posterior half being covered by a flap similarly made from the under surface of the cervix. When the bleeding is trifling and readily checked, this procedure renders the operation more neat and perfect. If styptics have to be used, the covering of the stump with mucous membrane will be useless, as no union can occur.

(*b*) *Cases of Hypertrophy of the Supra-Vaginal Portion of the Cervix Uteri.*—Cases of hypertrophic elongation of the cervix are

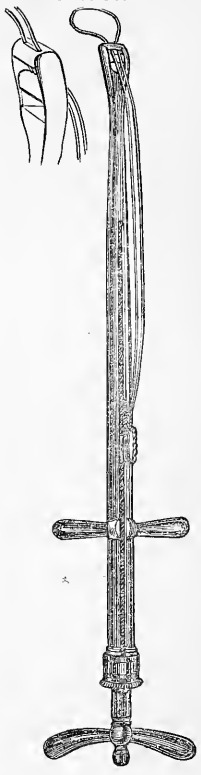
now not uncommonly treated after the manner proposed by Huguier, viz., by excision, and this plan I have satisfactorily carried out in some few instances.

When the hypertrophy is very great, this is the only satisfactory treatment, but before deciding on its necessity, the patient should be kept in bed for a week or two, in order that it may be ascertained how far the affection is reduced by this rest. It is the fact, as pointed out by Kiwisch, that rest materially reduces the bulk of the cervix under these circumstances. Rest and prolonged use of cold effusions would do still more. But when the disease is of long standing, and the uterine canal exceeding a total length of four inches, such palliative measures are inadequate. And the poorer classes, amongst whom the disorder is most marked, can ill afford the prolonged rest and attention requisite. Two plans of a palliative nature are open to us—(1) the use of pessaries, and (2) the closure of the vaginal orifice to such an extent as to prevent the escape of the cervix uteri, after a plan to be presently described. Each of these methods of treatment has peculiar advantages, according to the nature of the case. In many instances they prove sufficient; but in some few cases, as might be surmised, they are either inapplicable, or, in the long run, unsatisfactory.

The operation of Huguier is accomplished as follows: An incision is made behind the os uteri through the vaginal wall, of a semicircular form, and directed towards the centre of the cervix. Dissection is now made upwards, in order to expose the hypertrophied cervix, and separate it from its connections posteriorly—great care being necessary to avoid the reflection of peritoneum there situated. A corresponding incision and dissection is made now in front; here, however, great care is necessary to avoid injuring the bladder. As much of the cervix having been exposed as is considered advisable, it is removed by the knife. Huguier at first employed the knife in removing the cervix, but subsequently the écraseur, finding the hæmorrhage troublesome when the knife is used. Such is an outline of the operation in question. The result is that a conical piece of tissue is removed, including the os uteri, the vaginal, and a portion of the supra-vaginal part of the cervix. In the original memoir before referred to, Huguier states that he had performed the operation in 14 cases. In only one of such cases a fatal result—not due, however, to the operation—followed.

The operation is, judging from my own experience, a sound one, and in some instances offers the shortest road to the cure of the patient. The dissection and exposure of the cervix is the part attended with most difficulty, and it must be done with care. The bladder may extend to within half an inch of the os uteri, in which case it is evident that great caution must be required to avoid wounding it; again, the peritoneal reflection behind must be sedulously preserved intact. By keeping close to the cervical hard tissue these objects are secured. A sound in the bladder shows the position of that viscus, and acts as a good guide during the operation. For the dissection itself, scissors should be used; the knife occasions troublesome bleeding. I believe that a deep dissection—beyond an inch and a half, or at most two inches—is rarely required, for if the hypertrophied and, usually, thickened cervix be excised to this extent, the rest, which necessarily follows the operation, will suffice to complete the cure. Retraction of the severed cervix must be guarded against by previously transfixing the uterus above that point. The edges of the mucous membrane may be brought over the stump, and the opposite sides secured by sutures so as to cover it, after Dr. Sims's plan, if it be preferred.

Fig. 68.*



Of the various forms of the écraseur, the steel wire-rope écraseur is more useful in amputating the cervix in such cases. In Messrs. Meyer and Meltzer's instrument (see fig. 68), the wire and the slit fit accurately, and there is less liability to draw in extraneous tissues, while the power of the instrument is exceedingly great.

Prolapsus without Elongation of the Cervix.—These include the more ordinary cases of prolapsus. In dealing with this class of cases, the indications are almost always various; the treatment must have regard both to the primary cause and the secondary effects. 1. The condition of *the uterus itself*, and 2. The con-

* Fig. 68. Écraseur to be used with annealed steel wire. (Meyer and Meltzer.)

dition of *its supports*, have to be considered, and appropriate measures devised for rectifying defects and disorders.

1. *The Condition of the Uterus.*—In most cases of prolapsus the starting point has been a defective or altered condition of the uterus, which would have proved perfectly and completely amenable to treatment. Apart from those special cases of hypertrophic elongation of the cervix which have been already dealt with, the condition of the uterus which most frequently calls for therapeutic measures in cases of prolapsus, is undue size and fulness of the organ, very frequently indeed associated with long-standing flexion and other troublesome alteration in its shape. The treatment required in cases where there is flexion, so far at least as the uterus itself is concerned, has been discussed under the head of 'Flexions, and it need not be here repeated. It must not be forgotten, however, that cases of prolapsus, really due primarily to flexion, cease to present that element in a recognisable form when the affection has lasted many years. All we see, then, is the extremely advanced prolapsus; the uterus itself is by that time otherwise changed.

Among the general measures always required in these cases, rest, very careful attention to the bowels so as to avoid necessity for straining, cold injections, and a careful dietary, are very important.

2. *The Condition of the Uterine Supports.*—The methods of treatment which have formerly been had recourse to for preventing or curing prolapsus were based on the one idea of keeping the tumour from escaping at the vaginal aperture. Bandages, external pads, boxwood or disc-shaped pessaries applied internally—these were the principal measures of 'supporting' the uterus and supplying defects in the condition of the uterine supports. Next came improvements in the shape of operations for constricting the canal of the vagina, and thus restoring the lost support in a more natural manner. But there is yet room for improvement, and that improvement is only to be attained by a careful attention to the restoration not simply of the *outlet* of the vagina, but the position of the uterus in the pelvis. In other words—it is not sufficient to simply shut up the uterus in the vagina by means of a perineal operation, for most assuredly if the uterus be in a chronic flexed state, it will continue to excite expulsive efforts, and the restored perineum will by and by give way. Even in single women, who have never had children, and when the peri-

neum has never been dilated or destroyed by a fœtal head, very extreme degrees of prolapsus are sometimes witnessed.

Supposing the uterus to have been reduced by treatment to its proper size and shape, we have next to consider *how to maintain it in its proper place in the pelvis.* It must be quite obvious that unless this indication is complied with, the evil is likely to recur. It is in this direction that improvements in the treatment of prolapsus must be made. The cervical part of the uterus should occupy a position in the pelvis which is as nearly as possible its centre. The mechanism applied and the operations devised must have regard to this important circumstance.

Instead, therefore, of endeavouring simply to keep the uterus within the vagina, attempts should be made to maintain it in position at the top of this canal, which is its proper position. Admitting that this perfection of treatment is not possible in all cases, it is nevertheless practicable in most instances.

The principle of treatment which fulfils this indication is to render the vaginal canal rigid, thereby giving support to the lower part of the uterus, and to adopt such other measures of a subsidiary character as may maintain the vaginal canal in this rigid condition. In many cases this rigidity of the canal can be supplied by means of a pessary which, adapted as regards its size to the requirements of the patient, becomes practically an artificial vaginal stem to the uterus; and in certain other cases where the vaginal aperture has become too large to admit of the application of such an instrument, by performing an operation on the perineum, or by constricting the canal itself for some little distance from the aperture, and in this way securing a basis for the support of the vaginal stem, viz., the instrument.

It is only since the publication of the last edition of this work that I have been led to adopt the views just expressed, and they are now, therefore, put forward for the first time, not simply in a speculative way, but because I have tested their soundness and found them satisfactory in practice.

Apply these principles to the consideration of actual cases. Cases of slight cystocele associated with anteflexion, may be generally cured by the wearing of a well-adjusted 'cradle' pessary as described in the treatment of anteflexion; but if the cystocele be of long standing, a constriction of the vaginal aperture by operation is necessary, the instrument being worn subsequently. An air-ball pessary is a palliative measure in some of these cases, where the cradle is inconvenient, or difficult to adjust, and where

the perineal aperture is not much increased in size. In the case delineated in fig. 61 no treatment, short of a considerable narrowing of the vaginal aperture was sufficient, the prolapsed portion of bladder being hypertrophied and much thickened.

In cases where the prolapsus is dependent simply on retroflexion of the uterus without much laceration of the perineum, the oval ring pessary is a most admirable instrument when properly adjusted. It very precisely carries out the indications above alluded to, maintaining the vagina in its proper position, and, at the same time, and often quite efficiently, preventing the uterus from resuming its retroflexed position. Within certain limits it acts very well, but attention must be paid to the following points. As stated in the chapter on Flexions, if the flexion is of long standing the ring alone may fail to cure the flexion, other measures being requisite; but once cured, the ring will prevent its recurrence, and, moreover, it will, if there be sufficient perineal support below, prevent prolapsus occurring. The ring must be adapted to the size of the vagina. Number 3 or $3\frac{1}{2}$ generally answers the purpose in such cases as those contemplated, it must be made broader below than above, and a curve analogous to that of the vagina must be given to it. The copper wire, gutta-percha-covered rings which I employ lend themselves admirably to the necessary process of fitting, for nothing can be a greater mistake than to suppose that one instrument will fit all cases. The instrument must be adjusted to the case, and, when properly fitted, may be worn for months without inconvenience.

If there be rectocele, whether associated with retroflexion or not, the case generally requires an operation to restore the injured perineum. Subsequently, the uterus often requires to be sustained in its position by a pessary, as above directed for retroflexion. The rectocele may be slight in degree, the tumour small, but instruments are generally useless in such cases, inasmuch as the prolapsed bowel is so near the vaginal aperture. The discomfort attending these cases of rectocele is sometimes relieved by giving very small (tea-spoonful) doses of castor oil every morning.

We next come to those cases when the mass which is protruded is more considerable in size, and where the vaginal aperture is very large, either because it has been very much torn in labour originally, or because the tumour has become larger and larger in process of time. When the whole mass prolapsed does not exceed the size of a hen's egg, we may hope, under favourable circumstances, to satisfactorily treat the case, without an operation, by

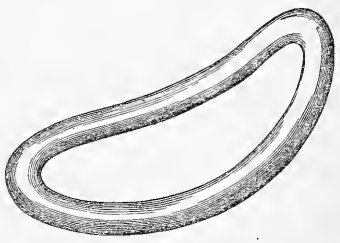
the use of instruments. Sometimes we are foiled even then, for what appears to be a tolerably good perineum may not give sufficient basis for maintaining a suitable pessary in its place. When the mass exceeds in bulk the size of an egg, a real cure is rarely obtained without an operation.

First of all we may speak of palliative measures, for even in the worst cases some patients reject operative measures, and in some the age of the patient or other circumstances put an operation on one side.

The mere *Reduction of the tumour* is sometimes very difficult, when the parts have been some weeks prolapsed, and the neck thickened by inflammation. To effect this reduction, the urine may be removed by the catheter, the patient placed in a favourable position, and the pedicle or neck of the tumour well covered with oil. Seizing the tumour between the two hands it is then gently compressed from side to side, and pressed upwards, the attempt being made in such a manner that the part *last* prolapsed shall be first reduced. Attempts made otherwise and by simply pushing the mass in an upward direction may altogether fail, but the plan above directed I have always found successful. Dr. McClintock suggests strapping the tumour in order to reduce its bulk. I have never found this necessary. The ulcerations or abrasions of surface seen in such cases readily heal when the tumour is reduced.

Internal supports.—The most satisfactory of these is the oval ring pessary already described, the original idea of which I believe belongs to Dr. Meigs. He first used a ring of metal covered with a softer material. Dr. Hodges next used quadrangular-shaped instruments of iron, covered with gutta percha. My own instruments are of copper, and the shape to be given them is to be decided by the requirements of the case. The globular box-wood pessary which has been frequently used is not satisfactory for reasons obvious enough, nor are globular pessaries of any kind likely to act beyond mere palliatives, as they do nothing towards the restoration of the position and integrity of the vagina, but rather the reverse. The disc-shaped pessary is a better instrument, and in practice I have met with cases when this instru-

Fig. 69.*



* Fig. 69 shows the shape of the ring pessary usually required. See also fig. 48 for other representations of the instrument.

ment has been worn for some years with benefit. It should be of ebonite if worn for any length of time. It comes more nearly to the ovoid ring, which I now recommend, than any of the pessaries which have been hitherto used in cases of prolapsus. Various sizes are required in different cases.

Various forms of air pessaries, globular as well as disc-shaped, are kept by the instrument makers, but they are not satisfactory for prolonged treatment while open of course to objections already mentioned.

Zwank's pessary I only mention because it has been in rather general use. It is an unscientific instrument inasmuch as it distends the vagina very greatly from side to side, and perpetuates the prolapsus by dragging the uterus still lower towards the vulva; the only merit it possesses is, that it prevents the escape of the mass from the vulva.

External supports.—Under this head are included mechanical contrivances for preventing prolapsus, having their fixed point from without. The perineal pad and bandage consists of an elastic, or non-elastic, abdominal belt, which is the fixed point, and a perineal pad, which is of a flattened egg shape, and is so adjusted by a strap fixed anteriorly and posteriorly to the abdominal bandage as to press upon the edge of the perineum. The pad is sometimes made elastic by means of an india-rubber air-ball. This apparatus supplies in some degree the deficiency of the perineum, and prevents in some cases of prolapsus the expulsion of the mass outside the vulva. Here of course its function ceases. In some cases straps passed over the shoulders are the fixed points, being used instead of, or as an assistance to, the abdominal bandage.

Another principle of treatment consists in the use of a rigid stem of metal or otherwise, which terminating above in the form of a small ball, or cup-shaped, is maintained in the vagina by means of a perineal strap, attached to an abdominal bandage. External frameworks of metal fixed anteriorly to the abdominal bandage, or to a kind of hernia belt, may be made the basis of support to such intra-vaginal stems. It is obvious that from without it is possible in this manner to adjust an internal support very firmly. The inconvenience attached to the wearing of such external solid mechanical supports is a great objection to them, but if external supports are to be made really efficient, and to be efficient they must be capable of maintaining the vagina in its proper position, some such principle of construction as this is really required.

Obviously, the alternative is the performance of an operation which will radically cure.

Radical Operations.—The success with which the very worst forms of prolapsus can now be treated by operation will render this method of dealing with them more and more popular, especially if after such operations care be taken to deal with the uterus and promote its restoration to shape and position in the pelvis. The principle of the operation is to *constrict the vaginal canal.* Dr. Marshall Hall seems to have been the first to suggest it, and Mr. Heming the first to have practised it. The part of the vaginal canal so dealt with was at first the lower aperture or entrance of the vagina, and this operation has received important developments at the hands of Mr. Baker Brown, Dr. Savage, and others. A further step consists in the constriction of the vaginal canal higher up *as well as* the vaginal aperture. Another procedure consists in the constriction of the upper part of the vaginal canal suggested and carried out by Dr. Marion Sims.

With respect to the merits of these three different operations, which we may for convenience of reference designate as A, B, and C, much will depend on the case itself. A simple perineal operation is sometimes quite sufficient when the vagina has not been much distended, but when the protruded mass is considerable the vagina is necessarily much stretched, and simply to close the aperture of the vagina is attended with no permanent benefit. Many cases require a sort of combined operation, a restoration of the perineum, and a narrowing of the canal itself for some little distance upwards, which is a method I have myself frequently practised; while some cases may possibly be best treated by Dr. Sims's operation, presently to be described.

The *Perineal Operation* (A).—It may be well in this place to consider the treatment of ruptured perineum in its entirety, including recent as well as chronic cases.

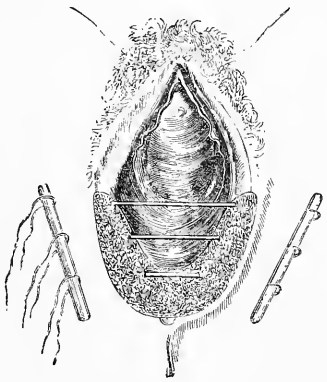
When the perineum is torn in the process of labour, the rent extends to a variable depth backwards, sometimes destroying the whole sphincter of the rectum, in other cases not affecting the sphincter recti at all, but subtracting little or much from the perineum. If the rent looked at immediately after the labour is over exceeds an inch in depth, it may be said to be a case for operation. By 'immediately' is meant in this place a few minutes after the birth of the child when the parts are customarily inspected. Some days later a rent one inch in depth originally will have become diminished—even in cases when no union has

occurred—very materially. And what has appeared a rather large rent perhaps is then found to be comparatively trifling. When the rent is at all considerable, however, the operation is required. It should be performed within one hour from the birth, while the surfaces are still raw and bleeding. The surfaces are generally very well secured in apposition by rather deeply applied silver wire sutures: two or more may be required. I have found them most easily introduced by means of a needle two and a half inches long and bent into a completely semicircular shape. Such a needle can be employed with the patient lying on her side in the ordinary obstetric position. The sutures should go to the bottom of the wound, and they should come out on the surface some way from the edges. So performed the operation is very simple. The nurse carefully and frequently dries the parts with soft lint, not using water, the knees are tied together, the catheter is employed, the bowels not allowed to act for at least three days, and on the fourth or fifth day the sutures can be removed. The result is generally very satisfactory. It is quite true that by rest and position union will sometimes occur without use of sutures, but this result cannot be depended upon, and the primary operation is so little troublesome or painful to the patient when done at once that unless the rent is very slight it is best so to perform it. It is of very little use inserting sutures when the labour has been over some hours; union rarely then occurs.

The later operation should not be performed until at least one month after the labour. Careful inspection of the parts is required to determine on the line of procedure. Good health, avoidance of erysipelatous influences, a dry, well-ventilated room, are essentials to success. The bowels should be very carefully evacuated by injections on each of the two days previous to the operation. In long-standing cases of prolapsus complete rest in bed for some days is quite requisite, and all ulcerative processes should have ceased. The hairs near the part to be operated on are first removed by a razor, the patient having been placed in the lithotomy position at the edge of the table. A semilunar incision is first made corresponding to the edge of the perineum, and indicating the outer edge of the surfaces to be bared. A corresponding internal semilunar incision is next made within, as shown in the annexed figure (fig. 70). And the internal and external lines of incision connected by two horizontal cuts. The strip of mucous membrane enclosed is then removed by the

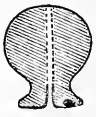
scalpel. The extent of this surface so removed varies in different cases. It should always be deeper in the middle line (the floor of the vagina) than at the two extremities of the horns of the crescent; from one inch to an inch and a half in width is required in the middle line. The opposite sides, thus rendered raw,

Fig. 70.



are next brought together by deeply inserted sutures. The quill suture or modifications of it have been most employed. I have used for some time past beads made of ebonite and of such a form as to allow of the wire used being easily attached to them. (See fig. 71.) They are little balls with a neck or groove cut in it, and perforated through the middle. They possess the great advantage of permitting an easy regulation of the tightness of the suture, and allow of a better circulation in the soft tissues implicated. The quill suture is apt to give rise to great swelling and even sloughing of the new perineum; but I have never seen this happen with the bead suture. The deep sutures, two or three in number, are inserted at a distance of about three-quarters of an inch from the edge, and the needle carrying the suture should so pass as not to be visible until it emerges on the skin on the opposite side. One of the sutures at least should pass as deeply as this. When the deep sutures are inserted they should be temporarily tightened in order that it may be ascertained by the touch internally that the internal edges are really in apposition, otherwise gaping results, and union will not occur. Failing this the deeper ones must be re-inserted. Silver wire, rather stout, is I con-

Fig. 71.

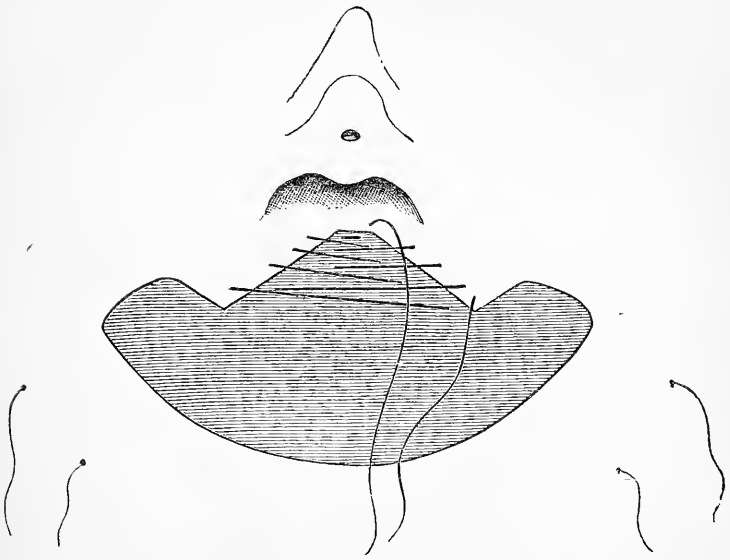


sider preferable, and the needle used must be a perforated one, having a nearly semicircular large sweep, and a large firm handle. It is rather more difficult to pass such a needle through, but the purchase thus obtained is more perfect. The ends of the wire are readily secured to the perforated beads. When the deep sutures have been fixed, two or three superficial ones are generally requisite, for which a smaller wire serves best. The knees are then tied together, and the patient removed to bed. In my opinion the best after-treatment of the wound is to use no water, but simply a piece of dry lint for the purpose of drying the surface, which latter should be done frequently. Position on the side, but the side may be changed from time to time. The deep sutures to be loosened or removed at the end of three days, the superficial ones rather later. Opium to be given in doses of one grain night and morning for the first three days, the catheter when required, the food to be nutritious, but light and moderate in amount. The bowels require careful management. If the wound is not very near the rectum they may be opened by an enema five days after the operation, but it is better to wait longer if the sphincter ani is involved and careful liquefaction of the fæces by soap and water enemata should then be performed before the contents of the rectum are allowed to escape.

The *combined operation* (B), consisting of construction of the vaginal canal as well as its lower aperture, I have practised in the following manner:—One plan is to remove a triangular strip of mucous membrane about two inches broad below, and about half an inch broad above, from the floor of the vagina, the upper end or apex of the triangle being quite close to the os uteri. The ordinary operation (A) is then performed as described above. The shape of the surface thus bared is shown in the annexed drawing. Another plan is to remove *two* triangular strips from the vaginal canal, one on each side of the floor of the vagina, the operation A being superadded. When the edges of these triangular bared spots are brought together, the vagina is of course proportionately constricted. The method which I have pursued of maintaining the edges in apposition is to use a stout piece of silver wire. By means of a short curved needle, such as is used in vesico-vaginal fistula cases, the stitch used after post-mortem examinations is employed to bring the edges together, beginning from above. As the wire is drawn through it is straightened, and finally constitutes a kind of splint. In fig. 72 the arrangement of the suture is shown before the wire is pulled straight. The upper end of the

wire, which is close to the os uteri, is turned downwards to prevent its scratching, and cut off short; the lower end projects at the peri-

Fig. 72.



neum, and is twisted round one of the beads when the operation is completed. This splint-stitch, as it may be termed, answers very well; healing generally occurs, and the wire, having done its work, comes away in four or five days without trouble or necessity for stretching the perineal wound. If two triangular strips are removed, the same procedure is adopted with each of them. This combined operation at once restores the perineum, and removes the superabundant and hypertrophied vaginal walls.* The two operations may be readily performed at one and the same time.

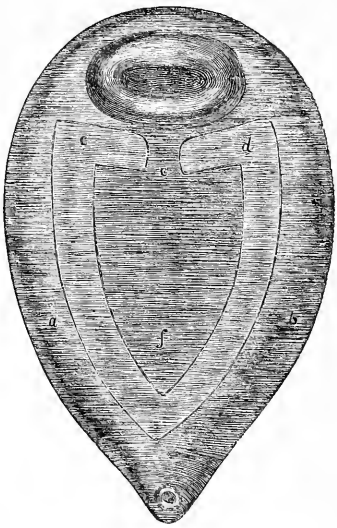
Dr. Savage describes a method of operating which substantially much resembles the above. He extends the perineal operation by removing the mucous membrane upwards along the floor of the vagina, but he relies on deep sutures for producing coaptation. Such coaptation along this internal line can only be produced by the deep sutures at the cost of shortening the vagina altogether. Such shortening, inasmuch as it implies descent of the uterus, I consider objectionable, and therefore the use of separate sutures

* This method of constricting the vagina was first described by me in the *Lancet*, June 5, 1869.

for the internal portion of the operation as above described is necessary.

Operation for Constricting the Upper Part of the Vagina (c.) —Dr. Marion Sims * describes this operation as follows :—The operation consists in removing a V-shaped piece of the mucous membrane forming the roof of the vagina, and therefore covering the bladder. The apex of the V is near the urethra, and the two arms reach to the side of the cervix uteri. Finally, the shape of the excised surface is that represented in fig. 73. The opposite de-

Fig. 73.



nuded surfaces are next brought together by means of sutures, *a* to *b*, *c* to *d*. The effect is, that the vagina has its canal much contracted; a little pouch is left opening at *e* (into which the uterine cervix might slip if the opening be left too large, as in cases reported by Dr. Emmet) for escape of the secretions of the part. Dr. Sims advises that, subsequently to the operation, the patient be kept in bed, or in the recumbent position, for two or three weeks, the bowels to be confined for a week, the catheter to be used. The lower sutures are removed in eight or ten days, the upper ones in a fortnight. The principle of Dr. Sims' operation is to constrict the vagina superiorly, and the constriction is effected by removing part of the *roof* of the vagina. The principle

* *Op. cit.* p. 310.

of the operation I have recommended is to constrict the canal along its floor. Experience must show which of the two procedures is preferable.

In some cases of cystocele a narrowing of the vagina anteriorly is requisite. Thus, in a very obstinate case of cystocele, the procedure is to be recommended of taking out a triangular strip of mucous membrane on each side of the vagina near the urethra. The perineum has generally also to be dealt with by operation A.

Lastly, it must be mentioned that constriction of the vagina has been effected by the use of Desgrange's small forceps, employed two or three at a time, and pinching up successively small portions of the mucous membrane. The actual cautery could be employed for the same purpose. These methods appear, however, slow and unsatisfactory.

CHAPTER XIV.

AMENORRHŒA.

DIAGNOSIS of Nature of AMENORRHŒA.—Cases in which Menstruation is not, and never has been, present—The various Causes of this Condition; Defective Formation or Absence of the Organs concerned; Retardation of Puberty; Absence of Secretion; Retention; Pregnancy—Diagnosis of these one from the other—Imperfect Establishment of Menstruation—Menstruation, previously regular, has ceased—Causes of this Condition: Pregnancy, Suppression, Retention, Premature Cessation of Catamenia.

TREATMENT OF AMENORRHŒA.—Treatment for Delay of Puberty or defective Development—Treatment for Disorder of General Health with Amenorrhœa—Emmenagogues, &c.—Chlorosis and Amenorrhœa—Vicarious Menstruation—Treatment of SUPPRESSION—Acute Form—Means to be Adopted—Emmenagogues; Mechanical Stimulation of Uterus—Treatment of Menstrual RETENTION—Cases of Absence of Vagina—Cases of Imperforate Hymen—Cases of Imperforate Os Uteri.

UNDER the term amenorrhœa will be considered those cases in which menstruation is either absent altogether, or in which the quantity of discharge is less than it should be. The term is a very vague one, and simply defines the presence of a condition which may be symptomatic of many widely differing disorders or physiological changes in the generative organs.

For purposes of DIAGNOSIS we may in the first place consider the varying phenomena associated or not with amenorrhœa.

The series of cases which may be first examined, are those in which

(*a*) *Menstruation is not, and never has been, present.*

The first point which it is necessary to determine, in endeavouring to ascertain the cause of the non-appearance of the menstrual secretion, is: Are the organs essential to the performance of this function actually present? If the *ovaries be absent*, no menstrual discharge can take place; and the like holds good if, the ovaries being present, the *uterus* be absent. Cases coming under either of these categories are rare. In cases of absence of the ovaries the external signs of puberty are wanting; the breasts, under such circumstances, would be small and undeveloped, and

absence of sexual desire and of other feminine characteristics might be expected to be observed. *Absence of the uterus*, or what practically amounts to the same thing—extremely rudimentary formation of this organ—is less rare than absence of the ovaries. No absolutely distinctive signs of the absence of the uterus can be given: a careful examination only is the means of determining the diagnosis. From the facts which have come before me I infer that there is no absolute relation between the outward and the internal conformation. That is to say, the external generative organs may be normal, while the internal ones (e. g. the uterus) may be very small and imperfectly developed.*

Absence of any one of the parts of the generative apparatus just referred to—of the ovaries, uterus, or vagina—is rare; but it is not so uncommon to find that the uterus and ovaries, although actually present, retain their infantile conditions; that degree of development necessary to the establishment of the catamenial function failing to take place. (See chapter on Malformations, &c., of the Uterus.) There may be no defective condition of the bodily health to be detected, and yet from month to month there is no appearance of the discharge. The 'proper' age is gone by, and the friends of the patient become seriously uneasy. In a few cases of this kind the vagina is healthy, the uterus present; the only thing wanting, in fact, is the discharge, the cause being a slightly defective condition of the development of the uterus; this organ being found normally constituted, but retaining to too great a degree its childlike condition. Sir J. Y. Simpson has called particular attention to the connection of this condition with 'amenorrhœa.'† The signs of ovarian activity are either absent, or present only in a very slight degree. These cases give no occasion for anxiety as regards the immediate effect on the patient; but the prognosis may be serious as regards her matrimonial prospects. It is, in a word, uncertain what course will be taken with the generative organs—whether they will remain in this functionally idle condition, or not; and, if not, when and how the appearance of the secretion will take place. The diagnosis, then, is a matter of extreme importance: much may depend upon it; and the nature of such cases cannot be too carefully scrutinised.

* The subject of the congenital defects, malformations, &c., of the uterus, has been elaborately treated by Kussmaul in his work *Von dem Mangel, der Verkümmerung und Verdopplung der Gebärmutter, &c.* 8vo. Würzburg: 1859. In this work there will be found a very large number of illustrative cases.

† *Medical Times and Gazette*, 1861.

For the purpose of ascertaining, firstly, whether the vagina and uterus be actually present, and secondly, if present, whether they present or not that imperfect degree of development alluded to, it will be necessary to undertake a physical examination of the condition of the external generative organs, and of the vagina and uterus.

It will be important to determine the question—*Is puberty retarded?* With reference to the arrival of puberty, we have first to look for the *outward* evidence of the same in the form, development, &c., of the body generally, and of the external sexual organs in particular; we have to seek for *internal* evidence of the functional activity of the reproductive organs, in the symptoms or signs described under the term menstrual molimen. (See 'Phenomena of Menstruation.') It must not be forgotten that the presence of menstrual molimen does not indicate anything more than that the ovaries are present. The uterus may be so defectively formed that menstruation is not possible, although the ovaries are, so far as circumstances admit, exercising their normal function.

If the patient exhibit other characteristic evidences of having arrived at puberty, and no menstrual discharge have been observed,

Either, 1. *There is no secretion of the menstrual fluid;*

Or, 2. *The menstrual fluid is secreted, but not evacuated—retention;*

Or, 3. *The woman is pregnant.*

Pregnancy.—It is possible for a woman to become pregnant in whom no catamenial discharge has ever been observed, as several well-authenticated cases prove.* In such cases, either conception takes place at the exact time when the function of menstruation is about to be established, and the pregnancy is then the cause of the absence of the menstrual flow; or, it is an idiosyncrasy, now and then, but rarely, observed, owing to which no menstrual secretion ever occurs; although this circumstance proves no bar to the woman's fertility. It is a mistake, then, to suppose that it is impossible for the woman to be pregnant because the menses have never made their appearance. It is in young women who have married early, and before the arrival of the catamenia, that instances of this kind are likely to be met with. It is in these very instances, moreover, that the real state of the case is most likely to be overlooked. It will be remembered, in investigating

* Montgomery, *op. cit.* p. 77.

a possible case of this exceptional character, that if pregnancy be present, there will be a complete absence of the periodic menstrual molimina, a circumstance which will assist in distinguishing the case from one of retention of the menses. In both pregnancy and menstrual retention, the abdomen may be enlarged, and the uterus is necessarily increased in size.

But the woman may have been married for some years, and no discharge ever observed. Here also pregnancy is possible, as has just been stated. Some women bear children, but never menstruate; of which fact we are assured on the authority of several writers and observers of repute. In these cases, however, the signs of ovarian activity were probably not wanting upon the occurrence of conception, though this circumstance is not alluded to in many of the instances of pregnancy without previous menstruation which have been recorded.

In cases of *Retention of the Catamenia*, the ovaries and the uterus discharge their functions regularly, but there is no outlet for the secreted fluid. The uterus becomes enlarged, an abdominal tumour is felt, and the woman is often, under these circumstances, supposed to be pregnant. The ordinary history of such a case is as follows:—Puberty arrives, and with it the indications of activity on the part of the generative organs, and recurrences of the menstrual molimina are observed from month to month. The pain and discomfort at these periods are at first inconsiderable, but after a time these symptoms increase in intensity; a sense of fulness and weight in the pelvis remains also in the intervals between the menstrual attempts. The symptoms become gradually more severe in character, the patient is never thoroughly easy and comfortable. The bowels are constipated; there are frequency of micturition, permanent and severe pains in the loins, all periodically increased in severity. The health fails, and the patient passes from a condition of perhaps robust health to the opposite extreme; the appetite is lost, and nutrition greatly interfered with. And now the uterus, increasing in size from the presence of the retained catamenial secretion, forms a tumour readily detected in the hypogastric region. The patient is often considered to be pregnant, and the supposition that pregnancy exists is apparently perhaps confirmed by the presence of those gastric symptoms usually associated with pregnancy, such as vomiting and nausea. The breasts may also sympathise, and become painful and tumefied. The intensity of the symptoms observed varies much in different cases; and the degree to which the uterus becomes distended is open likewise to

great variation: it would appear that in some instances a portion of the menstrual secretion is from time to time absorbed, and a large accumulation thus prevented. When the distention of the uterus reaches a certain point, pains in the back resembling labour pains, and doubtless due to contractions of the uterus, are observed.

The diagnosis is arrived at by a consideration of the symptoms and by physical examination. The characteristic points, so far as the symptoms go, are—the presence of puberty; generally complete absence of menstrual discharge; presence of periodic attacks gradually increasing in severity, of the kind already described; a fulness in the pelvic region, which goes on increasing from month to month, and which gives rise to difficulties in micturition and defæcation; all these symptoms, be it observed, occurring soon (within the first year or so) after puberty has arrived. If the woman be married it will, in the large majority of cases, but not in all, be found that sexual intercourse is performed with difficulty, or that it cannot be performed at all. The physical signs are — presence of a tumour in the hypogastric region, discoverable by examination of the abdomen, and the want of an outlet for the menstrual fluid, discoverable by an examination of the vagina.

From pregnancy without previous menstrual discharge this condition is distinguished, firstly, by the symptoms, the periodic molimina being absent in pregnancy; and, secondly, by examination *per vaginam*, which, in the case of retention, would discover to us the existence of atresia of this canal, imperforate hymen, or closure of the canal of the cervix uteri. The rare case of absence of the uterus, the ovaries being well developed and in activity, is to be distinguished from retention by the fact that the menstrual molimina, though present, are imperfectly marked and wanting in intensity; in addition to which, a simultaneous examination through the bladder and rectum would fail to detect the presence of the uterus in its normal position. Practically this latter question is hardly likely to arise.

The only other condition to be eliminated from the consideration is non-secretion of the catamenial fluid. Here the menstrual molimen (possibly) and puberty are present, but no discharge appears. If there be an absence of all signs of accumulation in the uterus, of symptoms of fulness and pressure, and of the physical signs before referred to as observable when the case is one of retention, these are indications that the case is not one of

the latter description. The examination *per vaginam* detects no atresia of this canal, and sexual intercourse is not impeded. It is not sufficient to determine that the vaginal canal is free; for although the retention is mostly due to obstruction in this situation, the obstruction may be situated in the cervical canal of the uterus itself. The latter condition existing in connection with retention is, however, very rare. The diagnosis of pregnancy from non-secretion of the catamenia rests on the absence of the molimina in the former, and on the absence of a pelvic tumour in the latter condition. When it has been ascertained definitely that retention is present, the next object in view should be to determine the cause of the retention. (See 'Examination of the Vagina.')

Neither of these conditions, retention or pregnancy, being present, we adopt the alternative that the menstrual discharge does not appear because it is not secreted. The causes of non-secretion will be considered presently.

If nothing materially wrong be detected in the condition of the general health of the patient, while the signs of puberty previously spoken of are present, if no menstrual fluid be secreted or present in the uterus, and if pregnancy have been eliminated from the question, the conclusion to be formed—a conclusion liable to modification according to the age of the patient—is, either that the development or formation of the uterus is defective, or that owing to idiosyncrasy the patient does not menstruate.

(*b*) *Imperfect Establishment of Menstruation.*

There is a class of cases also very frequently presenting themselves in practice in which a discharge has occurred on one or more occasions, but very slight in amount, and only enough to show that menstruation is possible.

It is in connection with these cases of imperfect establishment of menstruation that a light-coloured discharge appears—replacing in a manner the catamenial flow—at intervals. This spurious form of menstruation may occur; for two or three or more periods before the normal flow occurs, even in cases when there is nothing evidently abnormal present. It is in such cases also that the so-called vicarious menstruation may occur; and the diagnosis of such cases is especially interesting, not less from the frequency with which they occur in practice than from their actual importance.

The cases next to be considered are those in which

(*c*) *The menstrual function has been regularly performed at some previous time, but has subsequently altogether ceased.*

The 'courses are stopped.' The point to be determined is the cause of the cessation in question. The conditions capable of giving rise to cessation of menstruation of the kind now under consideration are the following:—

Pregnancy.—Suppression of the menses, as a sign of pregnancy, is one to which considerable importance is usually but erroneously attributed. 'We are,' says Dr. Montgomery, 'quite justified in adopting, as a general rule, that in healthy women, whose menstruation has been established and continued regular, and who are not nursing, conception is followed by a suppression of the menstrual discharge at the next return of its period; but then this suppression may not so occur; and, on the other hand, it may happen from a variety of other causes altogether unconnected with pregnancy.'

In the investigation of a case of suppression of the menses, in order to determine the possible existence of pregnancy, the statements of the patient must be received with caution, and especially if there be reason for believing that any motive for concealment of the real facts of the case exists. 'Nothing,' says Casper,* 'is easier for a person who is desirous of simulating pregnancy than to declare that menstruation has ceased for such and such a time; and it is only by a favourable accident that an examination is made at the catamenial period, and the imposition thus discovered.' In like manner, menstruation is now and then simulated, in order to avert the suspicion of pregnancy, and artificial staining of the linen with blood has even been had recourse to, in order to carry out the deception. In one case related by Casper, pigeon's blood was used for the purpose, but on examination of the blood by means of the microscope it was found that the corpuscles presented an oval shape, and the imposition was thus at once made manifest.

These sources of error having been examined and dismissed, we have next to determine the value of menstrual suppression as a sign of pregnancy.

Its actual value amounts to very little. Suppression of the catamenia for three or four months not unfrequently occurs from causes altogether independent of pregnancy. In young women

* *Practisches Handb. der gerichtlich Medicin. Biolog. Th.* Berlin, 1858, p. 201.

only just arrived at puberty, the interval is now and then as long as this before the function is thoroughly and completely established; further, it is not very uncommon for the menses to be suppressed just after marriage, for a month or two, without pregnancy taking place.

If pregnancy have existed for more than four months, other data for diagnosis, having a much more positive value as signs of pregnancy than the mere absence of the catamenia, enlargement of the uterus, mammary changes, &c., are available, and should be sought for by examination and otherwise. In women who have an object in concealing the fact of the existence of pregnancy, the absence of the catamenia for two or three periods is, however, to be regarded as a suspicious circumstance, and should be sufficient to put the practitioner on his guard, although it need hardly be observed that this suspicion should be confined to himself at this stage of the enquiry. If it be cruel and improper rashly to give utterance to suspicions damaging to the fair character of the patient, it is equally damaging to the reputation of the practitioner to allow the existence of pregnancy to escape his notice. Both extremes are to be reprobated. The presence of 'morning sickness,' associated with catamenial suppression, would make the suspicion of pregnancy a little stronger; but some pregnant women are never 'sick.' As a rule, the suspicion of the existence of pregnancy may be dismissed, if, after four or five months, the physical signs of pregnancy, such as enlargement of the uterus, &c., do not show themselves; but even this rule is one to which there are exceptions. It now and then happens that the catamenia are suppressed for two or three months, and the woman *then* becomes pregnant. In such a case, the physical signs just alluded to would not, of course, present themselves at the end of the four or five months from the date of the suppression, and an erroneous inference might thus be drawn. In some rare recorded instances, women have been known to present the peculiarity of never conceiving until after three or four months' previous suppression. Again, pregnancy may occur at a somewhat advanced period of life, and when the menstrual phenomena have for some years altogether ceased. The absence of menstruation in a woman over forty years of age, for a period varying from two to nine years, *may* be followed by pregnancy at the end of that time.*

More frequently, perhaps, the fact of the menses having ceased is made the basis of the conclusion that pregnancy exists by women

* See Montgomery, *op. cit.*, for several interesting cases of this kind, pp. 88 *et seq.*

who desire to be pregnant, and who, somewhat advanced in life and arrived at 'a certain age,' interpret facts according to their own wishes. Here embarrassment is not seldom produced; women at this age are ready with all those presumed corroborative facts with which their own experience or the experience of their friends has made them familiar; and it is only by a rigid adherence to the rule to take nothing which is simply asserted for granted, that the practitioner will prevent himself from being led to form equally sanguine expectations with the patient herself. At the period of sexual involution, that is to say, at the time when the functions of reproduction are about to come to an end, the mere cessation of the menses is therefore of less value as a sign of pregnancy than at any other period of life. It is the fact that, at this period of life, a suppression for two or three months, the discharge then returning, often rather profusely, is not at all unusual.

The absence of the catamenia, then, must never be considered as a proof of pregnancy; but in many cases it is of infinite service in directing attention to the view of its possibility. Examination of the abdomen, the vagina, and the breasts, gives more decisive information; and on the data thus afforded only can anything like a positive opinion be given.

Presence of Menstruation during Pregnancy.—In connection with the present question—the value of suppression of the menses as a sign of pregnancy—it is necessary to mention that, in a certain number of cases, even when the patient is pregnant, a discharge more or less resembling the menstrual discharge may occur from month to month. Elsässer * has collected nearly fifty cases, in which a discharge of this kind was noticed during pregnancy. Thus, in eight cases a discharge occurred once during pregnancy, in ten cases twice, in one twice or three times, in eleven cases three times, in four cases four times, in six cases five times, in five cases eight times, and in two cases nine times during pregnancy. And cases are related—one I have myself placed on record †—in which patients habitually menstruate only when pregnant. The discharge observed in these exceptional cases sufficiently resembles the ordinary menstrual discharge to be so regarded by the patient.

There are many circumstances which may give rise to a discharge from the uterus during pregnancy, such as cancer, inflammatory

* Quoted from Henke's *Zeitsch.* Bd. 73, p. 402, by Casper, *opus cit.* p. 202.

† *Lancet*, vol. ii. 1858, p. 91. See also a case, not, however, precisely of the same kind I have more recently contributed in vol. viii. p. 221, of the *Obst. Trans.*

or congested conditions of the os, &c. An important class of cases, however, are those in which there is an occasional sanguineous discharge from the uterus, which may or may not simulate menstruation, in women the subjects of *extra-uterine* pregnancy. A rather common symptom in cases of extra-uterine pregnancy is sanguineous discharge occasionally occurring during the two or three months immediately subsequent to the date of the supposed impregnation. Thus a woman six weeks after the date in question has a hæmorrhage. This may be due to abortion, it may be simply undue retardation of menstruation, it may be due to extra-uterine pregnancy. The points to which attention should be directed, if extra-uterine pregnancy be suspected, are the following:—Presence of unusual pain at a particular situation in the pelvis; detection, by digital examination of the vagina and by examination of abdomen, of a tumefaction corresponding with the seat of the pain—enlargement of the uterus. If the patient continue to present signs of pregnancy, while hæmorrhage recurs occasionally, this conjunction of signs is to a certain extent confirmatory of the suspicion. And supposing the patient to be suddenly seized, at the end of two, or three, or four months, with symptoms of internal hæmorrhage (see 'Pain referable to Generative Organs'), a history such as that indicated, together with the symptoms of internal hæmorrhage, point to the conclusion that the case is one of extra-uterine pregnancy and rupture of the cyst, or of some vessel in its neighbourhood. In a remarkable case of extra-uterine (tubal) gestation, related by Mr. Cheesman,* the patient went beyond the full term, never even suspecting her pregnant condition, and deceived by the appearance of what she considered to be a menstrual discharge. There was a discharge from the vagina every five or six weeks, chiefly in clots. The case is the more remarkable that the patient had previously had four children.

Mole Pregnancy.—There is a form of pregnancy which is out of ordinary rules, and is rarely met with; viz., when the ovum becomes diseased and degenerated at an early period of pregnancy, and a 'mole' results. In a case of this kind, either the ovum is rejected soon after, when the nature of the case becomes at once apparent; or it is retained for some months. Thus a woman may present herself with an abdomen but slightly enlarged, the uterus but little increased in size, and who has had suppression of the

* *Lancet*, Sept. 14, 1861.

menses for from three to seven or eight months, or even considerably more than this, in whom the cause of the suppression is, first, pregnancy, and secondly, the presence in the uterus of the degenerated result of the same. If the 'mole' grow to a large size, as is often the case with the hydatidiform variety, the abdomen and uterus are proportionately enlarged; and the attention is so directly attracted by this, that it cannot be easily overlooked; but in a case where the enlargement is neither so considerable nor so apparent, difficulty may occur. Such cases are rare; and, as a rule, it may be taken for granted that, when the catamenia have been absent for several months, and no enlargement of the abdomen or of the uterus occurs, the case is not one of pregnancy.

Cases in which menstruation, or, at all events, a discharge resembling it, is present for two or more periods, *coincidently with pregnancy*, and the pregnancy ending naturally, are not quite so rare as is usually stated.

Suppression.—The diagnosis between suppression of the catamenia of a pathological nature, and the kind of suppression just alluded to, in which there is a physiological reason for it, is occasionally difficult when the catamenial discharge has been absent only for two or three periods; for the pathological suppression is sometimes accompanied with some of the general symptoms of pregnancy, as morning sickness, swelling of the breasts, &c., when pregnancy is certainly not present. This form of suppression very closely simulating pregnancy is noticed by Denman and Montgomery as frequently occurring soon after marriage; and Montgomery characterises such cases as always liable to great doubt, and extremely embarrassing to the practitioner. In an instance which came under my own observation, a like obscurity surrounded the case, but the patient had been married for several years. Under such circumstances the decision must be postponed, and a guarded opinion given.

Another case which is often a source of embarrassment is presented to our notice in young women in whom the catamenial function has only recently been set up; and here we may be in doubt whether the absence be due to suppression, to pregnancy, or to other causes which have been already considered. The absence of a known cause for suppression, the fact that the patient continues in good health, and the absence of signs of pregnancy, would lead to the inference that the case was one of retarded puberty (the age of the patient admitting of this hypothesis),

rather than one of suppression in the sense of the word in which it is now used.

From retention of the menses, and from pregnancy, suppression would equally be distinguished by the absence of abdominal enlargement and tumour.

Retention may be present in cases where menstruation has been previously regularly performed. In cases of dysmenorrhœa, there may be a partial retention of the menstrual fluid, but in such cases the retention does not produce cessation of menstrual discharge of the kind now under consideration. Retention will be easily distinguished from pregnancy by due attention to the facts of the case. The symptoms of *complete* retention in a woman who has previously menstruated regularly do not differ materially from those already described as present in women who from the first suffer from retention. The diagnosis of retention from pregnancy, difficult at first, becomes easy afterwards.

It is extremely important to separate the conditions just alluded to—pregnancy, suppression, and retention of the catamenia—one from the other, a separation which will be easily effected by attention to the various diagnostic points laid down: endless difficulties present themselves in doubtful cases until the diagnosis has been advanced to this stage. Having made out that it is not a case of pregnancy or retention, the only alternative is *suppression*.

Delay in the Appearance of Menstruation (Amenorrhœa) from constitutional Causes.—In this class of cases the uterus and other organs are well formed up to a certain point, but fail in undergoing that further degree of change or increase in size which is usually observed at the age of puberty—the advent of puberty, in other words, is retarded. This retardation of puberty is, in most cases, the result of disease, of which we very shortly find other evidences present, but in a few cases the puberty is retarded much beyond the usual time, the individual remaining apparently in perfect health. These two classes of cases are widely different, and their discrimination, which is of great importance, has been already pointed out. Amenorrhœa from non-secretion of the menstrual fluid in women who have arrived at puberty, and in whom the sexual organs present no remarkable deviation from the normal state, is a symptom of very great interest, the cases included under this head being very numerous. It is very frequently the case that this form of amenorrhœa is connected with a defective condition of the general health. Of the *general conditions* which may prevent the occurrence of menstruation, *Chlorosis* is

perhaps the most important. Opinions are somewhat conflicting as to the precise relation in which the two things—the chlorosis and the amenorrhœa—stand one to the other. The signs of what is termed the 'chlorotic' condition are the following: At the period when the external signs of puberty begin to manifest themselves, the patient usually experiences, at monthly intervals, some of the 'molimina menstruationis' before referred to, but, coincidently, she falls into a general state of ill-health. The strength fails, there is extreme lassitude, often great drowsiness and indisposition to exertion of all kinds; there is cephalalgia, often very intense in character; the whole digestive system is deranged; inappetency, or singularly depraved states of the appetite, nausea, obstinate constipation—these are almost constant symptoms. The skin assumes a remarkable and highly characteristic appearance, being, as the name *chlorosis* denotes, of a greenish yellow colour, more or less intense in degree in different cases; a ghostly kind of pallidity is often seen. The lower extremities may become œdematous, and the disturbance of the circulating apparatus is evinced both by this and by the frequent palpitations, noises in the ears, and alterations of the sounds of the heart and of the great vessels detected by auscultation. The chlorosis is to be regarded in these cases as the cause rather than the consequence of the amenorrhœa, or, to speak more correctly still, we should regard them both as due to the disordered condition of the whole nutritive functions of the body, which is the primary etiological element. Chlorosis may be observed not only in cases where there has been no menstrual discharge of any kind, but also in individuals who have formerly menstruated slightly, but in whom the menstrual phenomena have ceased to evince themselves.

It does not appear that, in any considerable number of cases, the *tuberculous diathesis* exerts a marked influence in preventing the establishment of menstruation, although it may exercise an appreciable disturbing effect on that function at a later period, the reason for which appears to be that menstruation generally commences at an earlier age than that at which the manifestations of the tubercular diathesis most commonly occur. Sometimes, however, the retardation is unmistakably due to the presence of a phthisical tendency, which is itself indeed an evidence of an extremely low state of the nutritive powers.

An attack of severe illness of any kind will delay or prevent the appearance of the menses. Dr. West mentions a case in point, in which a severe attack of scarlet fever at the age of fifteen had had

the effect of preventing menstruation up to the age of twenty.* *Cretinism* has a similar effect.

There appear to be a few cases in which permanent amenorrhœa without disorder of any kind is observed, and this condition does not necessarily in such instances prevent the occurrence of pregnancy. Instances of idiosyncrasy in this particular are very rare.

Cases in which there is *imperfect establishment of menstruation* are not uncommon. The period of puberty arrives, and a slight menstrual discharge appears, then ceases, and reappears again slightly at the end of two months or more or less. Or the coloured discharge is replaced by a pale fluid, tolerably regular in its monthly appearance. These are cases to which the term amenorrhœa is, strictly speaking, not applicable, but they really belong to the same category as those just considered, for as a rule the deficient menstruation is due to some disorder of the general health. A circumstance sometimes observed in cases where menstruation does not take place is the occurrence of what is termed *vicarious menstruation*—a periodic sanguineous discharge from some other part of the body, one of the mucous surfaces, or the surface of an ulcer.

Suppression of Menstruation.—Menstruation may be abruptly stopped at any period of its occurrence by the operation of certain external or internal causes. Suppression of menstruation, as already stated, is a common but not universal sign of pregnancy. Menstruation may be stopped abruptly, or more slowly and gradually. We have thus two distinct types of cases.

a. Sudden Form.—Here the circumstances indicate the operation of a disturbing element: the menstrual period having arrived, the discharge has continued for some hours and has then suddenly ceased, there being an apparent connection between the cessation in question and some external or internal disturbing influence known to have been in operation at that particular juncture. Thus the menstrual flow may be suddenly suppressed by the feet getting wet or by a chill received in any other way, by fright or by the reception of distressing or exciting news. These are the most common causes of the kind of suppression here alluded to. Sexual intercourse has been known to produce the same result. The first symptom of the presence of one of the exanthematous diseases may be the sudden stoppage of the catamenial discharge.

Another variety of this form of suppression is that in which

* Lectures on *Diseases of Women*, p. 34.

there is no cessation of the discharge of the marked character just described; the discharge continues the regular number of days, but fails to recur at the expected time. This form of suppression, as also that which may be called 'suspension' of the discharge, may occur from a variety of causes. The catamenial function is frequently suspended, according to Sir Ranald Martin, in ladies on the voyage from India by the Cape. Dr. Tyler Smith states that these effects of a marine atmosphere extend in some habits to a residence by the sea-side. He mentions an instance in point, in which a lady who went to reside at one of the islands on the western coast of Scotland, together with her sister and their two maids, all became amenorrhœal.* Montgomery notices the effect of mental depression in producing this suspension in the case of young girls confined in prison. I have had occasion more than once to observe that women are liable to have the menstrual discharge suspended for one or two periods after first going to reside in a house the staircases of which are of stone and uncarpeted, their previous residence having had a wooden staircase only.

β. Gradual Suppression.—Under this head may be considered those cases in which the discharge, having diminished in amount for two, three, or more periods, or the interval having become longer and longer, the discharge has finally ceased.

The causes of gradually supervening suppression of the menses may be conveniently classed under three heads—constitutional, organic, and physiological.

Constitutional.—Any circumstance, or chain of circumstances, calculated to interfere with the nutrition of the body generally and the due performance of the various processes the sum of which constitutes life, may give rise to suppression or cessation of the menstrual secretion. It very frequently happens that, at the very time when the vital processes are in a state of great activity—when the girl is changing into the woman, and it is more than ever necessary that the body should be duly exercised, well nourished, exposed to the fresh air, and recruited by sufficient rest—these conditions so necessary to due development and healthy growth are wanting. Young women belonging to the lower and middle classes of society, and who are engaged for many hours daily in sedentary occupations of various kinds, needlewomen especially, more particularly suffer in this way. The health gradually fails, and after a time menstruation ceases. Then, and not till then, in the majority of cases, advice is sought. Suppression not seldom

* *On Leucorrhœa*, p. 182.

takes place in a more acute manner in young women so engaged; a slight cause, and one which in a robust individual would be inadequate, being now sufficient to determine it.

When this gradual suppression is observed it behoves us carefully to scrutinise the bodily condition of the patient generally. The suppression is an important symptom, not in itself, but as indicative of some, perhaps deeply-seated, morbid change, the early detection of which may be of the greatest service to the patient, if a right use be made of the knowledge thus acquired. The more common of the general constitutional conditions leading to the suppression now under consideration are: *long-continued anxiety of mind, plethora, chlorosis, anæmia, severe hæmorrhages, or long-continued discharges from the various mucous surfaces, deposition of tubercle in the lungs or other organs.*

Premature termination of the catamenia, which may be considered as a form of amenorrhœa, may be caused by chronic uterine disease, by severe and repeated hæmorrhages, &c., or it may occur without any assignable reason. In the case of a woman more than thirty years of age the amenorrhœa may turn out to be permanent, although of course this could not be known at first.

Of the *local causes* of gradual suppression, the following are the chief. *Flexions of the uterus* frequently completely arrest menstruation, the discharge, less and less each year, finally ceases long before the proper time. Numerous instances will be found in the abstract of cases of anteflexion and retroflexion of the uterus at pp. 225 and 221 bearing out this statement. *Disease of the ovaries* is often attended from the first with amenorrhœa, but not by any means always. When one ovary alone is affected, the menstrual functions may go on apparently as usual. *Chronic peritonitis*, resulting in the formation of constricting bands over the ovaries—a condition to the frequent occurrence of which Dr. Tilt has, in this country particularly, called attention—may give rise to amenorrhœa of this kind. *Chronic hypertrophy* of the uterus is sometimes associated with amenorrhœa. *Fibrous tumour* of this organ also now and then produces amenorrhœa. Absence of menstrual discharge is sometimes noticed previous to the occurrence of *peri-uterine hæmatocele*. *Stricture of the cervical canal of the uterus*, occurring after pregnancy, or produced by the repeated application of caustics to the os uteri, is occasionally met with as the cause of this form of amenorrhœa.

The following is a tabular statement of 29 cases of amenorrhœa,

occurring in hospital practice (1865–1869), the object of which is to give a clinical view of the matter. In 5 of these cases only was an examination made; the exact diagnosis is not demonstrated in the others. Four cases of vicarious menstruation are appended.

It is necessary to revert to the table of cases of retroflexion and anteflexion in order to study the subject of amenorrhœa more completely. In those tables will be found the majority of the cases of 'amenorrhœa,' those mentioned in this place being most of them incomplete in regard to diagnosis.

Amenorrhœa, *mostly Constitutional in Origin, including Cases of* Sudden Suppression *of* Catamenia.

(*Cases of Amenorrhœa due to Mechanical Diseases of Uterus not included.*)

Age.	Initials.	Married or Single.	No. of Children.	Condition of Menstruation.
16	E. E.	S.		
16	E. M.	S.		
17	A. A.	S.		
17	L. H.	S.		Due apparently to insufficient food. Ceased 6 months.
17	F. H.	S.		Chlorosis. Menstruation rare and scanty.
17	A. S.	S.		Ceased for 3 years.
18	M. A. R.	S.		Ceased 4 months. Works at sewing machine.
18	E. C.	S.		Ceased 4 months.
18	S. H.	S.		Ceased 1 year.
18	E. H.	S.		Works in shop. Long walks.
18	E. S.	S.		Menstruation only *one* day, but regular. (Uterus small.)
19	E. F.	S.		Ceased 6 months. Nursemaid.
19	— R.	S.		Ceased 3 months.
21	E. M.	S.		Ceased 2 months. Suppressed from washing feet in cold water.
22	M. A. B.	S.		Menstruation about once in 3 months. Sits 9 to 10 hours a day.
23	E. H.	S.		Scanty menstruation. Nursemaid.
23	E. R.	S.		Menstruation every 3 months.
23	E. C.	M.		Ceased 1 year.
26	M. A.	M.	1	Ceased since labour 2½ years. Suckled 1½ year. (Examined.)
26	A. F.			About every 4 months only of late.
28	J. E.	S.		Only menstruated 3 times in last 3 years.
29	M. L.	M.	4	Suppression for 6 weeks. Sat on cold bricks.
31	E. A.	S.		Ceased 4 months.
33	A. W.	M.	1	Ceased 5 months.
32	A. S.	M.	3	Intervals too long. (Examined.)
33	D. H.	M.	2	Menstruation scanty.
33	M. S.	M.	6	Ceased 9 months. Uterus hard; not enlarged.
34	A. G.	M.	0	Ceases when in London; returns in the country.
36	A. S.	M.	0	Menstruation scanty. Uterus normal.
37	E. W.	M.	3	Ceased 5 months.

VICARIOUS MENSTRUATION.

Age.	Initials.	Married or Single.	No. of Children.	Condition of Menstruation.
19	A. P.	S.		
19	A. L.	S.		Ceased 8 months. Hæmoptysis vicarious every 2 months for 1 day.
28	A. B.	M.	1	Epistaxis each period for last four. Coincidently with scanty menstruation.
31	J. P.	M.	6	Epistaxis every month, also bleeding from mouth. Menstruation scanty.

TREATMENT OF AMENORRHŒA ARISING FROM DELAY OF PUBERTY OR IMPERFECT DEVELOPMENT OF THE GENERATIVE ORGANS.

In cases where the arrival of puberty is simply delayed, if the patient be apparently strong and healthy, and if there be no appearance of menstrual molimina, no interference is necessary, at first at all events; and under these circumstances the result is usually satisfactory. The bodily rather than the mental faculties should be called into exercise, and every means taken to nourish and invigorate the system.

Absence of menstruation, together with absence of menstrual molimina, is hardly ever noticed after the age of nineteen or twenty, unless dependent on defective development of some part of the generative apparatus. In the chapter on Uterine Malformations, &c., will be found cases illustrative of this condition. In cases of defective development of the uterus or other of the generative organs, the patient may be otherwise in perfect health. Those cases are the least encouraging in which the menstrual molimina are entirely absent. Where the absence of menstruation is connected with the presence of an undersized uterus—the 'infantile' uterus—Sir J. Y. Simpson recommended the continued wearing of a series of small galvanic pessaries of greater and greater length and thickness.

It need hardly be stated that cases requiring this method of treatment are very exceptional indeed. The circumstances which might justify or necessitate its adoption would be those in which general invigorating measures have been fruitlessly tried for a considerable period (which period would vary according to the age of the patient), a very complete diagnosis made as to the state of the uterus, and the condition of the health of the individual being

such as conclusively to show that the absence of menstruation is not dependent on any defect therein. The employment of Faradisation promises good results under such circumstances. In a well-marked instance of infantile uterus in a girl æt. 20 who had never menstruated, this agent was used under my direction in University College Hospital for some weeks. The action of the current had the effect latterly of inducing a copious leucorrhœal discharge. The patient became vastly improved by the treatment adopted, and left the hospital for benefit of change of air; but of the final issue of the case I have no information.

The prospect of a good result from such internal treatment of the uterus is infinitely small, unless the uterus be of a tolerable size. For instance, if the uterus be half an inch too short, and the patient has arrived at the age of 20, little benefit of any kind could be expected. The double examination described at p. 57 should be always instituted in such cases: care is required to distinguish between a flexed uterus and one which is too short. Further, it must be recollected that the imperfectly developed uterus has naturally a greater degree of anteflexion than in the normal state.

In some cases, where the general health appears to be good but no menstruation occurs, marriage is efficacious in inducing the appearance of the menstrual flow. Marriage should not, however, be recommended with the view of curing amenorrhœa, unless means have been taken to ascertain that the vagina and uterus are well, or reasonably well, developed.

TREATMENT OF AMENORRHŒA ASSOCIATED WITH DISORDER OF THE GENERAL HEALTH.

A large number of cases come before us in which menstruation is imperfectly established: the discharge has appeared once or twice, slight in quantity, and has then ceased; the subjects of these symptoms being usually young women between the ages of twelve and eighteen. We find the individuals in question suffering from general indisposition of some sort, with which the amenorrhœa is associated. In a smaller number of instances there has been no attempt at menstruation, the patient having fallen into a state of ill-health before arriving at the menstrual age.

The relation, as cause and effect, subsisting between the disorder of the general health and the absence of menstruation, it is

exceedingly important to recognise from a therapeutical point of view. 'The function of menstruation,' says Sir Charles M. Clarke, 'like the other functions of the body, is best performed when the system is in health. Now, health is not constituted by excess of fulness, or by the performance of violent actions, any more than by debility or enfeebled action; consequently, the exhibition of stimulants will not influence this secretion, unless attention be given to the restoration of the general health of the patient even in cases of debility. Still less will such a mode of treatment be applicable to cases of interrupted menstruation occurring in plethoric habits, where the presence of the plethora itself is the cause of the interruption of the due performance of the natural secretions. Instead, then, of resorting to such measures—to the employment of the whip and of the spur in such cases (when, if they do anything, they do mischief)—let the morbid peculiarities of the constitution and the habits of life of the patient be taken into consideration; let the first be counteracted, the second be improved; let the sanguine have her excess of fulness diminished, let the debilitated have her powers augmented; in short, let the general health be amended, and the functions of health will be restored.'* This is sound doctrine. The fruitlessness and absurdity of attempting, by so-called emmenagogues alone, to cure amenorrhœa coexisting with impaired health, are obvious. It must be held to be decidedly improper, by local stimulation of the uterus, to attempt to produce a menstrual flow in a phthisical patient, for instance—certainly, to give a prominent place to such treatment. It is the experience of all observant practitioners that those remedies act most efficiently as emmenagogues which produce a most decidedly beneficial effect on the defective condition of the general health. In treating such cases successfully, the production or the re-establishment of the menstrual secretion is the *final* result to be attained. Improvement in other respects must be effected first; the rest will follow as a matter of course, in the vast majority of cases.

The treatment, then, must be general—to find out what is the weak point, and to attack this. Either the patient has been living badly, taking too little food or food not sufficiently nutritious; or she has been leading a life too sedentary or too artificial, deprived of pure air—in short, subjecting the body, at a very critical period, to many influences known to be incompatible with sound health.

* *Diseases of Females*, part ii. p. 38.

Medicines are quite subordinate in importance to the removal of these defective hygienic conditions.

In the industrial classes of the community, neglect of hygienic laws is still productive of an immense amount of mischief in this respect. In the higher classes of society it is too frequently the case that the solicitude of parents as to the mental culture of their children interferes materially with maintenance of physical health; and this is the chief reason why, in schools especially, there has been too little time devoted to exercise, and too much to sedentary intellectual work. The fault which is frequently committed in the management of young women and girls at school is the want of adjustment of the amount of exercise to the particular case. Some girls are strong and well nourished, and such may be benefited by a good long walk, always provided that they are *trained* to such exercise. On the other hand, girls who have not been well fed, whose tissues are weak and relaxed succumb frequently, or lay the foundations of serious disease after a course of long walks for which they are not fitted in any sense of the word. Again, the gymnastic exercises, which have now become rather fashionable for girls and young women must be judiciously regulated, or they may do much harm. I have lately had under my care two sisters, one married and the other single, educated in Paris, where, amongst other gymnastic exercises, jumping from a considerable height was part of the performance. They have both suffered from severe retroflexion of the uterus, the symptoms of which began very shortly afterwards. Again, horse exercise, which is very beneficial if the patient be strong, is not to be lightly recommended. Occasionally and in moderation it is good, but I have known it do the greatest injury. It should be, but it is not, needless to add, that the observance of early hours, administration of good and nourishing food, thorough ventilation, warm clothing, are all essentially necessary for the preservation of health during the two or three years preceding and following the date of commencement of menstruation. Observance of these rules—necessary to maintain individuals of good constitution in a state of health—is doubly necessary when there is a tendency to 'weakness,' or when disorder of any kind is actually present.

We generally find, as an effect of the bad state of health of the patient, partly also as a cause of the same, that there is great sluggishness and inactivity of the digestive organs, evinced by want of appetite and constipation; and hence, before it is possible to administer the amount of nutritious food the patient requires,

it is frequently necessary to effect an improvement in the condition of the digestive organs. Five or ten grains of the compound rhubarb pill, followed by a draught containing Rochelle salt, or sulphate of potash, the next morning, may be given once or twice a week at first. Stronger medicines are rarely necessary. Hygienic measures, exercise in the open air, sponging with cold water, friction of the skin night and morning with a rough towel, these are valuable accessory measures, the importance of which must be thoroughly explained to the patient, or they will not be regularly and efficiently carried out. The patient should be well clothed, and great care taken to keep the surface and extremities warm. 'It is,' says Sir James Clark, 'of the greatest consequence to invalids to maintain an active state of the circulation in the surface and extremities, which cannot be done in this country without the assistance of warm clothing.' These remarks apply with great force to the particular cases now under consideration. After a few days, tonics, as iron and quinine, may be given twice or thrice daily, the condition of the bowels being regulated according to circumstances. The Püllna, or Friedrichshall waters are found useful for the latter purpose, a dose taken early in the morning. One tea-spoonful of castor oil given every morning is a very efficient remedy, when the patient is not strong enough to take much exercise, and when straining at stool must be avoided.

The efficacy of iron in cases of amennorhœa is very great. It is best given as one of the components of a natural mineral water. As a medicine, it may be given in almost any form. The syrup of the phosphate is a good preparation. The citrate of iron and quinine is a good form of combining the two remedies.

The dyspepsia often present in such cases is a most troublesome complication, and is best treated by administering *frequently and in very small quantities*, for some days together, food of the simplest character; avoiding all solid matters, and giving the patient only such food as it may be found by experiment she is able to digest freely and easily. Milk and water, weak beef tea, yolk of egg beaten up uncooked with milk, these are some of the most nutritious and easily digested foods.

Wine is most essential in many cases, and I have found it of the greatest use, particularly in cases where the patient has been in a state of slow starvation (and such a state of things is not confined to the lower classes of society) for some months or possibly years past. The wine assists the patient to take food,

and certainly materially supports the strength. To the administration of meat in good quantity I attach much importance. It should be given two or even three times a day when the patient can take it.

Every means that can be devised to put the body in a sound state of health will be beneficial as regards the end in view—the induction of menstruation. This point must ever be kept in view: amenorrhœa is only a symptom, not a disease.

After suitable means have been well tried, and the condition of the health improved, it is occasionally advisable to send the patient to the sea-side for a short time, or at all events to order a change of air. In some cases, when medicines of a ferruginous nature are not borne well, it is found advantageous to send the patient to live in the neighbourhood of a chalybeate spring. The small quantity of iron which the water contains enables it to be taken, besides which, the change of air, scene, and occupation has a most beneficial effect in improving the condition of the health. The waters of Schwalbach, Spa, Pyrmont, Driburg, Kissingen, are some of those most to be recommended for internal administration. The ferruginous waters are not, however, to be exclusively recommended in obstinate cases of ill-health associated with amenorrhœa, for in some cases the continual use of hot baths, such as those of Vichy, Ems, Carlsbad, Wiesbaden, or Baden-Baden, do great good by increasing the action of the skin and of the secreting apparatus generally. Above all, patience is necessary in the treatment; we must not expect the discharge to appear at once, and, in point of fact, the patient usually improves in all other respects before this evidence of the cure being completed is obtained.

Are emmenagogues, then, never to be given with the view of producing in a more direct and immediate manner the catamenial flow? But rarely. They are more especially applicable in the cases to be presently considered, where there is suppression, and where the menses have been present. The actual and immediate production of the menstrual flow in the class of cases now concerned is, however, advantageous in one way, that it sets at rest any doubt we may have as to the possibility of menstruation. And the more direct action may be sought to be induced in cases where general measures have been fairly tried and found unavailing; also in cases where the general health being good, and no attempt at menstruation observed, it is thought expedient to try this method of treatment as a kind of *dernier ressort*. The best

method to follow in endeavouring to induce directly this action of the uterus will be considered presently.

Chlorosis and Amenorrhœa.—What has been said respecting the management of cases of amenorrhœa, with disorder of health of whatever kind, is here applicable. These cases are now and then obstinate, and in a chronic case time and patience are very requisite. The bowels are generally very costive. Daily, a laxative draught should be given, the medicine selected being that which acts most easily—rhubarb, Rochelle salt with manna; these are some of the simplest we can select, and by no means the worst; and once a week or so a stronger draught containing decoction of aloes with some aperient salt may be required. Ferruginous preparations are essential; small doses are generally the best; and they are most efficacious when given as constituents of mineral waters. It is often a matter of experiment as to which form of iron suits the best. The subjects of chlorosis are often so debilitated that great care is at first necessary, and they are unable to take much food or to bear much active exercise. Hence a vigorous treatment is not at first advisable. We must adapt the food and the regimen to the strength of the patient. Wine and good food are most essential in the management of these cases.

Amenorrhœa with Vicarious Menstruation.—The object of the treatment in these cases is first to improve the state of the health, which is generally bad, by tonics, &c., and secondly, to endeavour to induce congestion of the uterus and pelvic viscera at the menstrual periods. The patient should be treated, in fact, as if she were the subject of menstrual suppression. Lastly, it will be necessary to alleviate any discomfort, pain, or inconvenience which may be consequent on the presence of the unusual discharge.

TREATMENT OF SUPPRESSION OF MENSTRUATION.

In a case of *acute* suppression of the menses, if seen in time, the proper treatment would be to place the patient immediately in a warm hip-bath, and to administer a stimulant, such as hot gin-and-water, and, especially if a sudden chill be the cause, to endeavour to excite the action of the skin by placing the patient in bed, and giving a dose (ten to fifteen grains) of Dover's powder. A sinapism should be applied to the hypogastric region; hot water bottles or bags to the lumbar region. In strong or plethoric habits, cupping to the loins, or venesection, would be proper;

leeches to the vulva might be used in most cases. It is probable that the most powerful means of inducing the return of the discharge under such circumstances would be either the application of electro-galvanism, or the administration of an enema containing aloes by the rectum. It generally happens, however, that when the patient comes under observation the period for such treatment is gone by. We must in such cases wait until a day or two before the next period, and then apply suitable remedies. The remedies consist in keeping the patient quiet, maintaining a comfortable temperature of the body generally, placing her in a hip-bath, with mustard, night and morning, for three or four times if necessary, administering two or three times a day a warm stimulating draught, and if the case be obstinate, and other circumstances do not forbid, in using galvanism, or some one of the emmenagogues to be presently spoken of. Opium is a most valuable remedy in cases where mental emotions have had to do with the suppression. We now and then meet with cases of sudden suppression in young women of weakly habit, who have been subjected to disturbing emotional influences at the menstrual period. In these cases, opium and a supply of good nourishment should be both freely given, and rest and quietude enjoined.

Many different medicines or remedial measures are set down as efficacious in inducing the flow of the menses; but they are exceedingly uncertain in their effects and action in different individuals, and very frequently have no effect whatever. Most of the so-called emmenagogues act, it must be concluded, by producing congestion and fulness of the vessels of the uterus and surrounding parts. The following are some most recommended: aloes in form of enema, dissolved in soap and water (Aran); the old pill of aloes and myrrh of the Pharmacopœia, which should be given in doses of five grains or upwards, every night and morning, for a few days prior to the expected period; liquor ammoniæ, dissolved in milk (a tea-spoonful of the ammonia in a pint of milk injected into the vagina); savin, the oil of which may be given dissolved in mucilage in doses of three or four drops (Sir Charles Clarke, Dr. Tilt, and others); iodine (Dr. Rigby, who preferred it in the form of iodide of iron); Sir Charles Locock states that he has found a combination of myrrh, aloes, sulphate of iron, and the essential oil of savin, frequently of great utility. Ergot of rye, in doses of ten grains three times a day, is also highly spoken of by the same authority.

Mustard is said (Ashwell, Rigby) to have an emmenagogue

effect, given in doses of ten or twelve grains. Dr. Ashwell considered mercury the best remedy of the kind, and it has certainly appeared to me to do good in several cases in which I have employed it. On two successive nights, at the time of the next expected period, a dose may be given, each consisting of five grains of calomel and six grains of aloes, followed by a Seidlitz powder in the morning. The dose must be smaller than this if the patient be very feeble; indeed, presence of feebleness is contra-indicative of necessity for this kind of treatment at all. The syrup of the iodide of iron is the remedy I have most frequently employed, and I think highly of it for long-standing amenorrhœa originally arising from suppression.

Sir J. Y. Simpson employed as a means of cure the application of direct stimulants to the interior of the uterus—nitrate of silver, cantharides, or iodine—by means of a *porte caustique*, the application to be made at the time when menstruation should occur, and repeated at monthly intervals; he also recommended a kind of dry cupping of the interior of the uterus, and the employment of galvanic intra-uterine pessaries of peculiar construction, in the form of amenorrhœa now under consideration. Dr. Althaus states that he has in many cases found great benefit from Faradisation assiduously and properly applied; Pulvermacher's apparatus is also a most simple and ingenious method of continuously applying this therapeutic agent, and is peculiarly suited for chronic cases of amenorrhœa after the general health has been re-established by suitable means.

Cases of *chronic suppression* require to be treated on the foregoing principle—first, to correct the ill-health generally present, then to encourage month by month, by gentle measures, the return of menstruation.

TREATMENT OF CASES OF MENSTRUAL RETENTION.

The various physical conditions giving rise to menstrual retention, require each a suitable method of treatment.

1. *Absence of Vagina and Menstrual Retention.*—Here menstruation is not possible, there being no communication between the vulva and the uterus. Absence of such a communication is sometimes associated with defective development of the uterus; and in such cases, even if a communication existed, menstruation would not for that reason occur; but in other instances, although the vagina is wanting, the uterus is well developed, and menstrual

blood is poured into its cavity at each menstrual period. The distension of the uterus may be very considerable, the sufferings of the patient gradually increasing in intensity, chlorosis and other signs of grave constitutional disorders being present. The only treatment capable of affording relief is a mechanical one. The difficulties encountered in affording such relief vary in different cases, but are always very much greater than in the case of imperforate hymen with retention. And not only are the difficulties greater, but the danger from an operation is more considerable. The case operated on by Amussat* will probably always be quoted at once to illustrate the difficulties of an attempt to make a vaginal canal, and to point out how these difficulties may best be overcome. The case was that of a girl aged 15½ years, in whom the vagina was absent, and who had suffered from symptoms of menstrual retention since the age of 13. There was a tumour above the pelvis the size of the uterus at six months' gestation. The tumour was felt from the rectum; the urethra was the only opening at the vulva, and a sound passed into it could be felt from the rectum through a very thin partition (à travers des parties très minces.') The diagnosis was evident. Thereupon Amussat, after stretching the vulva, pushed the handle of a sound upwards beneath the urethra, and then, using the little finger in a similar manner, sought to make a passage towards the fluctuating pelvic tumour, in the direction of the vagina. By drawing the perineum downwards and at the same time pushing the finger inwards, a sort of separation was effected. Sponge was now inserted to maintain the dilatation, and three days later, this combined tearing and dilatation process was resorted to anew. After two further attempts, on the two following days respectively, the tumour was finally arrived at. The dilatation was kept up by means of sponge. On the tenth day after the first operative procedure, the tumour was punctured, first by a trochar, and next by a bistoury, and the menstrual fluid, so long retained in the uterus, allowed to escape. The tumour was, at the time of the operation, two inches from the vulva. The opening into the uterus was enlarged, and a canula inserted. Inflammation of the left Fallopian tube resulted, clots were expelled from the rectum. Four times after this the patient suffered from menstrual retention, but a cure was finally obtained, and she was restored to such perfect health that two years later the question of the propriety of marriage was seriously discussed.

* *Gaz. Médicale*, 1835, pp. 785 and 817.

Amussat rejected the use of the knife from the obvious difficulty of avoiding the bladder on one side, and the rectum on the other. The chief difficulty of following Amussat's plan is the tediousness of the procedure, and the objection on the part of the patient to its continuance. In a case related by Bernutz * the operative procedure was interrupted for this reason, when, as it appeared from what took place subsequently, the tumour of the uterus was on the point of being reached. In a case very much resembling that of Amussat's, my friend Dr. Braxton Hicks was prevented completing what promised to be a very successful operation for the formation of a vagina, in a similar way.†

Another method of treatment which has been adopted in cases of this kind is to puncture the uterus from the rectum. It is obvious that this procedure is open to the serious objection that the passage made for the escape of the menstrual blood is not in the natural position, while the evacuation of the fluid is also less under the operator's control. It appears that in some cases, however, the septum between the urethra and rectum is so thin as not to admit of the attempt to form a passage to the retained fluid in that position.

If formation of a vagina be really impossible, this tapping of the uterus from the rectum is the only alternative. For the performance of the operation a curved trochar is necessary, and great care must be exercised so as to avoid injuring the bladder. The observations as to the manner in which the fluid should be allowed to escape from the uterus, which will be presently made in relation to imperforate hymen, here apply with still greater force. The evacuation of the fluid must be made very slowly, the recumbent posture must be maintained, and opiates will be probably required.

An interesting case was related to the Obstetrical Society by Mr. Baker Brown, in which there was vaginal atresia with menstrual retention of two years' duration, the uterus as large as at four months of gestation. The uterus was tapped as above, the trochar left in for a fortnight. A month later the patient menstruated per rectum. In two cases, very similar to the one related by Mr. Brown, Dr. Braxton Hicks performed the same operation, and evacuated the contents of the uterus successfully. Dr. Hicks considers that the canula should not be left in the opening thus made for longer than ten or twelve hours; to avoid

* *Loc. cit.* p. 307.

† *Obst. Trans.* vol. iv. p. 232.

the introduction of air, he recommends that the canula be plugged just before the complete evacuation of the uterine contents.

2. *Imperforate Hymen, with Menstrual Retention.*—In these cases the difficulty is, not in affording relief to the patient and giving an outlet to the pent-up menstrual fluid, but in preventing the death of the patient from the operation. In a certain number of cases death has taken place after perforation of the membrane, for the relief of menstrual retention, and blood has been found effused into the peritoneal cavity, thus giving rise to peri-uterine hæmatocele. In other cases death has occurred, without effusion of blood in this manner, from peritonitis and pyæmia.

In these cases of menstrual retention, the uterus, the Fallopian tubes, and the vagina are distended with blood, the uterus attaining sometimes a very great size, and reaching as high or higher than the umbilicus in extreme cases; this state of things having persisted for several months, in some instances even for years, before the nature of the case has been recognised, or at all events before effectual relief has been attempted. The cavities containing the blood have their walls greatly thinned and otherwise altered.

It is the opinion of Bernutz * that the unfortunate result, when associated with intra-peritoneal hæmorrhage, is due to the contraction of the uterus, set up by the evacuation of the fluid, continuing and forcing the blood contained in the Fallopian tubes into the peritoneal cavity. This explanation probably holds good in most cases of this kind. The fatal result, in some instances, may be due to a combination of one or more circumstances. The sudden withdrawal of the distending force in cases where the walls of the Fallopian tubes have been thinned and enlarged, must itself have an injurious effect on the vitality of the tissues of the part in question. A certain number of deaths are to be attributed to purulent absorption, the admission of air producing decomposition of the blood and pyæmia. It is evident that the circumstance pointed out by Bernutz is exceedingly important in reference to the plan of treatment to be adopted in these cases.

A careful survey of the facts on record would seem to lead to the conclusion that a fatal result is much more likely to occur when the retention has lasted a long time; and the prognosis would consequently be more favourable for an operation performed

* *Clin. Méd. sur les Maladies des Femmes*, tom. i. p. 68.

two months, than in the case of an operation performed six months after the first attempt at menstruation. And this would clearly indicate the great importance of an early and complete diagnosis of the case. With respect to the operation itself, it is evident that in a case of retention due to imperforate hymen, the mechanical is the only treatment possible. A way must be prepared for the evacuation of the fluid, and to allow of the occurrence of menstruation. The mode of performing the operation which I consider preferable is as follows:—In the first place, it is extremely desirable that the evacuation of the fluid from the generative passages be spread over as long a period as possible in order to prevent undue and irregular action of the uterine fibres, and to allow time for the parts to return in the most gradual manner to their proper size. In the second place, it is absolutely necessary to avoid all possibility of passage of air into the vagina and uterus during or after the operation. The plan formerly adopted was, by means of a lancet, or bistoury, or trochar, to make an opening in the hymen sufficient to allow of the escape of the chief part of the retained blood at once, and at the time of the operation. I believe it better to make an opening at first just large enough to allow of the escape of a very minute quantity of fluid, and that this opening be made obliquely in the obstructing membrane, giving it a valvular character. The fluid should be evacuated *guttatim*. If the opening become closed, a second and similar opening to be made the following day, or two or three days later, and a firm but gentle support given to the abdomen by the aid of a bandage and carefully adjusted pad during the whole period of evacuation of the fluid. The patient to be kept in a state of absolute rest. The aperture in the hymen should not be increased in size until the uterus has returned to its proper dimensions, the object being, at first, simply to allow the fluid to escape in the most gradual manner possible. If, by any chance, air enter, and the fluid become decomposed, it would be safer at once to make a free opening. It is satisfactory to find that this method, suggested in a former edition of this work, has been adopted by others, and found to answer well. In a case not long since sent to me by Dr. Lyle we pursued this method, and with the very best effect. It is questionable whether the practice of injecting water into the uterus after an operation of this kind be safe. Bernutz recommends that in evacuating the fluid a period be chosen for the operation eight or ten days after a menstrual period, and that a small trochar be used. He considers pressure over the

abdomen objectionable. In the latter particular the method recommended by myself differs from that of Bernutz, for I consider, and my plan has been tested in practice, the pad and bandage indispensable. In other respects the principle of the two methods is identical, in both the necessity for slow evacuation of the fluid being recognised.

3. *Retention from Imperforate Os Uteri.*—Cases of *complete* retention due to this cause are rare. The more ordinary cases of *incomplete* retention—in other words, dysmenorrhœa—will be dealt with in the chapter on dysmenorrhœa.

CHAPTER XV.

MENORRHAGIA AND METRORRHAGIA.

Unusual Discharge of Blood from the Generative Organs.—General Remarks—Various Forms—General Causes of Menorrhagia—Importance of Flexions and Mechanical Hindrances to Escape of Blood—General Debilitating Causes of Menorrhagia—Other special Causes—Abortions—Retention of Menstrual Fluid—Placenta Prævia—Inversion of Uterus—Retention of Placenta—Cancer and allied Affections—Climacteric Hæmorrhage—Polypi—Fibroid Tumours—Enlargement of Uterus—Hæmatocele.

Diagnosis.—Examination of Substances expelled from the Generative Organs.

Treatment.—Tonics, Baths, &c.—Means of Restraining Hæmorrhage.

General Treatment of Menorrhagia or Metrorrhagia dependent on Organic or other Disease of Uterus.

In order to deal with this subject clinically and practically, it will be convenient to group together cases in which the *menstrual discharge is excessive in quantity*, and those in which there is *hæmorrhage from the generative organs*; and for this reason, until the diagnosis is made out, it is impossible to say whether the sanguineous discharge be really a menstrual discharge at all. The case may turn out to be one of miscarriage, or of hæmorrhage of independent character.

I propose, then, to consider together that large group of cases in which there is

Unusual discharge of blood from the Generative Organs.

In most of these cases, the discharge of blood proceeds from the uterus; but it is well to be aware that bleeding from the vaginal walls, or from the vaginal outlet, or from the urethra, may take place. Sometimes the pudendal veins become varicose, and burst; this rare accident generally occurring in women who are pregnant.

Excluding these possible but rare occurrences, we come to that large class of cases in which the uterus is the source of the discharge.

In considering that large class of cases in which there is unusual discharge of blood from the generative organs, it is well to

distinguish those cases in which the unusual discharge occurs coincidently with a menstrual period from those in which the unusual discharge is *not* coincident in point of time with the menstrual periods. The latter series will, of course, include hæmorrhages occurring after menstrual life has ceased.

In investigating these cases, the previous history of the patient must first be enquired into. Having ascertained what the individual type of the catamenia, so to speak, is, the deviations from that type will be more easily recognised. The catamenial secretion appears to be naturally more profuse in some individuals than in others, the quantity of the secretion being great, or the period during which it is observed being extended, from the presence of what may be characterised as idiosyncrasy, from the influence of climate, age, and the like. All these circumstances must be taken into account in giving an answer to the question, 'Is the catamenial secretion excessive?' In practice every form and degree of change from the normal individual type will be encountered. The change may be abrupt, or gradual; and the degree of importance attached by the patient to the fact of a change having occurred is by no means an indication of its importance, abstractedly considered. In many cases, the state of the general health informs us at once that the secretion is 'excessive;' but it is not always so.

In practice the forms under which menorrhagia and metrorrhagia present themselves are numerous. The following are some of the more common forms in which these unusual losses of blood from the generative organs exhibit themselves:—

1. The menstrual discharge becomes gradually from month to month increased in quantity, until in the aggregate the quantity lost is really considerable.

2. The loss at the monthly periods is great, and accompanied by passage of clots, presence of pain, &c.

3. The patient loses an excessive quantity of blood at the periods, and occasionally also in the intervals a copious discharge of blood suddenly occurs.

4. There is an almost continuous discharge of blood from the generative organs, sometimes with clots, alternating with leucorrhœa.

5. The loss of blood occurs suddenly, and not at the menstrual period, and is accompanied by pains in the back or region of the uterus.

This list might be indefinitely increased. The variations in

regard to the attendant phenomena, pain, intermittent leucorrhœa, offensive character of the discharge, and prostrating effects on the system, are also numerous.

In seriousness of character, also, we have many varieties. In many instances the loss of blood is simply an inconvenience; in others the patient's life is in peril from the quantity lost. In other cases, again, the prognosis is unfavourable because the disease occasioning the loss is a serious one.

GENERAL CAUSES OF MENORRHAGIA.

Considerable obscurity has always attended the investigation of cases of menorrhagia, for after accounting for the excessive loss of blood in many of them by the presence of various alterations in the uterus, a considerable balance of cases has remained in which the cause of the excessive loss has not been obvious or easily explainable. For the most part the blame has in these instances been thrown on the lining of the uterus. For instance, the lining of the uterus has been supposed by some authors to be in a fungous or villous state; others have attributed the excessive loss to endometritis. It is well known that a foreign body within the uterus, such as a polypus, even though very small in size, may give rise to much bleeding, and the inference has been drawn that some analogous cause must be in operation to account for these obscure cases of menorrhagia.

I have been led to take a different view of the pathology of menorrhagia since I have become acquainted clinically with the powerful disturbing effects of flexions on the menstrual functions, and the observations I have made have convinced me that one of the most common causes of menorrhagia is the existence of a marked flexion. As explained in the chapter on Flexions, menorrhagia is a natural effect of retention of menstrual fluid, such as is *liable* to occur (though by no means does it *necessarily* occur) in cases of flexion. The blood does not escape readily, it collects and distends the uterus, the cavity of which is thereby enlarged, the secreting surface increased, more blood poured out, and finally, the contents escape in a gush. Further accumulation occurs in a short time, and the event is repeated, with the result that, during the menstrual period, the patient experiences alternations of retention and escape of menstrual blood.

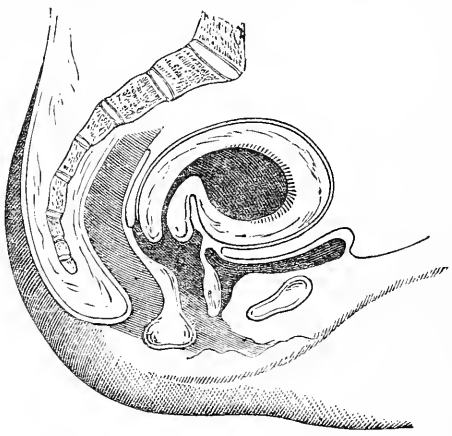
The slightest clinical study of cases of menorrhagia of the more ordinary character will convince the observer that the sequence of

events is as above described. A *continuous* flow of blood is very rarely noticed, the alternations are the prominent feature. This fact in the pathology of menorrhagia is undoubtedly exceedingly important from whatever point of view we choose to regard it.

Hence, *flexions of the uterus* constitute one of the first and most common direct or indirect causes of menorrhagia. Anteflexion most frequently, because that affection is more frequent than retroflexion. I have known many instances of patients who have suffered for years from excessive losses at the menstrual periods benefited at once by the cure of these uterine distortions.

Other causes operating in such a way as to give rise to a tem-

Fig. 74.*



porary retention of menstrual blood may produce a precisely similar result. For instance, *fibroid tumours* growing in the thickness of the cervix uteri, pressing on the canal and obstructing it, are not seldom causes of menorrhagia.

A material increase of the inner surface of the uterus, such as is present in *defective involution* of the organ after delivery, or from the presence of growths of a fibroid character in the thickness of the uterine walls, increases the liability to loss of blood, and an excessive loss may be observed in such cases apart from retention of the fluid; but, under these circumstances, if the uterus is made to assume a flexed shape the loss will very posi-

* Fig. 74 represents an enlarged expanded uterus, such as is sometimes met with in cases of menorrhagia. Cases somewhat similar, the cavity being smaller, are more numerous.

tively be much increased because of the addition of the retention element to the previously existing cause.

The loss of blood which may occur in a chronic case of flexion of the uterus is sometimes enormous, amounting to a flooding. The effect of this great loss, repeated possibly month after month, is to reduce the bodily strength to a very low ebb. The blood itself becomes changed, it is watery and deficient in blood corpuscles, and this depraved condition of the vital fluid comes to act itself as a cause of menorrhagia.

This leads us to consider the general causes of menorrhagia. It is undoubtedly the fact that when the blood is altered in certain particulars hæmorrhages are liable to occur. In a considerable number of cases of menorrhagia we have this element to deal with, and the case is not unfrequently of a very composite character.

Many conditions capable of causing profuse menstruation are such as are known to have a debilitating tendency. *Bright's disease of the kidneys*, indicated by an albuminous condition of the urine, generally accompanied also with œdema of the ankles, eyelids, &c., is one of the most important general causes of menorrhagia. *Excessive lactation* is another equally important cause; patients are often excessively debilitated under these circumstances: as a further consequence in these cases of excessive lactation, *mania* is not unfrequently observed. *Long-continued mental depression* is both a cause and an effect of menorrhagia. Then we have a large number of cases due to *chronic disorder of the digestive organs*, leading to congestion of the uterus and pelvic organs generally, *chronic affections of the great viscera, the heart, lungs, and liver*, also giving rise to the congestion of the pelvic organs, and, short of actual disease, general derangement of the system produced by *luxurious living* and *sedentary or unhealthy occupations*. Ovarian irritation and over-excitation are, probably, causes of this form of profuse menstruation more often than is usually admitted; the most frequent cause of this excessive ovarian irritation being *inordinate indulgence in sexual intercourse*. In cases of *purpura and allied affections* profuse menorrhagia is often observed.

Residence in damp or marshy districts where *malarious influences* are rife has been shown to be the cause of profuse menstruation in certain cases, and hence menorrhagia is not unfrequently present together with intermittent fever. *Residence in tropical climates* is, in the case of Europeans, followed, in most cases, by

profuse menstruation; indeed, in most cases where women return to England from India in a broken down state of health, menorrhagia is the prominent symptom. Troublesome flexions of the uterus are frequently found to be present in such patients.

According to my own experience, young women in whom there are signs of a tendency to, or an actual development of, *tubercle*, are very frequently the subjects of profuse menstruation, the cause being the defective and vitiated state of the blood.

Profuse menstruation is now and then a sequel to *fevers*, and it may be observed *after severe inflammatory attacks*, as of the lungs. In such cases, the circumstances preceding the profuse menstruation would explain its occurrence. The profuse menstruation is due in such cases to the condition of the blood itself.

Menorrhagia may be present *in cases of lead-poisoning*. It was first pointed out by Paul * that abortions are very frequently observed in women subjected to the influence of lead, and also that in the same class of cases menorrhagia is very common. I have observed cases the facts relating to which are quite confirmative of Paul's statement.

My friend Mr. Benson Baker has contributed further facts confirmatory of Paul's statements in an interesting paper read before the Obstetrical Society, and in which also he has given a good summary of Paul's original paper.†

A class of cases requiring a few words by themselves are those in which menorrhagia occurs from what may be termed *functional* causes, the hæmorrhage being an accompaniment or accident of exalted activity of the uterus or ovaries—more properly speaking, perhaps, of the ovaries. Sexual excesses, or circumstances calculated to excite and maintain the existence of erotic tendencies for any length of time, produce occasionally such a degree of functional activity of the ovaries as results in the production of profuse menstruation, and of hæmorrhage at non-menstrual periods. The amount and character of the menstrual discharge being thus guided and affected by the condition of the ovarian function, it is not to be wondered at that, when the *ovaries are the subject of disease*, the uterine sanguineous discharge should be also deranged. More generally the presence of ovarian disease diminishes, or at all events does not increase, the menstrual flow; but the reverse has been pretty frequently observed. Mechanically, also, and in

* *Arch. Gén. de Med.* 1860.

† 'On the Influence of Lead-poisoning in producing Abortion and Menorrhagia, with Cases.' *Obstet. Trans.* vol. viii. p. 41.

common with other adjacent organs, disturbances of the circulation in the ovaries may tend to hæmorrhage from the uterus. The practical deduction is that, in a given case, functional activity of the ovaries, or disease of these organs, may be the cause of uterine hæmorrhage, the uterus itself being really in a healthy state.

Irregular Appearance of Menstruation from Pyrexial Disorders.—Perroud (Gaz. Méd. de Lyon, Jan. 1862) has observed that an occasional effect of the onset of the pyrexial disorders is the appearance of the menstrual flow a few days before its time. In scarlet fever, in small-pox, in measles, unusual profuseness of the menstrual discharge, in some cases associated with the accident known as peri-uterine hæmatocele, has been observed. Mr. Benson Baker, who has made numerous observations in reference to small-pox, states that this sudden appearance of menstruation was a frequent premonitory symptom.

Mental disturbances may give rise to a flow of blood from the uterus of purely menstrual character, although not appearing at the ordinary menstrual period.

An important class of cases are those in which the loss of blood is connected with the presence, or previous presence, of the fruit of conception within the uterus.

Abortion.—A discharge of blood from the generative organs in a case where menstruation has been previously absent for a month, or for a period of two or three months, and in a woman whose age does not forbid the idea of pregnancy, should *always*, whatever be the condition and circumstances of the patient, lead the practitioner to suspect the occurrence of abortion. It need hardly be stated, however, how important it is that these suspicions should not be rashly expressed, nor until further enquiry or examination throw more light on the matter.

In cases of abortion, the menses are found to have been absent for from two to four or five or six months; the hæmorrhage which occurs begins slowly, preceded sometimes by shivering, sickness, pains in the back and thighs, &c.; and is accompanied by pains at the lower part of the abdomen, resembling, and in fact identical with, those of labour. The hæmorrhage is not continuous, but pauses, and recurs again after ceasing a few minutes or more. At each pause in the flow of blood there is a cessation of the pain. The fact that the pains continue, notwithstanding that there may have been a considerable flow of blood, is one of the points on which we are instructed most to rely in the

diagnosis of a case of abortion from one of excessive menstruation following suppression; but, practically speaking, the distinction is not worth so much as has been claimed for it. It often happens that there is a persistent slight trickling of blood, the flow of blood being suddenly increased from time to time. There is generally, too, a periodicity in the recurring attacks of pain and hæmorrhage. At the end of a few hours, or in some cases, a shorter interval, the ovum, or portions thereof, are expelled, together with clots; and if the expulsion have been complete, the hæmorrhage ceases, unless perchance there be a second ovum still in the uterus, as in case of twins. The expulsion may be delayed for a much longer time, or the embryo may be expelled, leaving the membranes behind, and in such cases the hæmorrhage continues, becoming at times very profuse. An abortion can, of course, only occur in a patient who has reached, but who has not exceeded the limits of, the child-bearing age. Hæmorrhage from the uterus, more frequently than is usually supposed, occurs from abortion at about the second month in married women; the real cause being often overlooked, and the case supposed to be one of simple menstrual irregularity. The diagnosis of early abortion from excessive menstruation is indeed often far from easy. If the abortion take place at an early period, examination of the uterus from the vagina gives no positive data for determining the point. The only reliable evidence obtainable at this period is that afforded by a very careful examination of the clots or matters expelled from the uterus. (See 'Substances expelled from the Generative Passages.') At a later period, the evidence from the physical condition of the uterus is more decided.

The diagnosis of abortion from cases in which there has been, previous to the occurrence of the hæmorrhage, *retention of menstrual fluid*, is very important. The phenomena present—viz. the uterine contractions and pains, the discharge of blood, the previous absence of the catamenia—may be the same in the two cases. Whereas, however, in abortion, the attack is single, and there is generally an absence of like symptoms for the two or three months previous, in the other class of cases there have been more or less constant pains present at the lower part of the abdomen for two, three, or four months, increasing in severity periodically, and culminating in a more or less profuse hæmorrhage. At least, such is one method in which menstrual retention may terminate.

If an abortion have occurred recently, and hæmorrhage take

place a few days after, recurring possibly on successive occasions, it may turn out, on enquiry or on examination, that the embryo has been expelled, but the placenta, or some portion of the membranes, retained. The placenta is small in the case of an ovum at three to four months; but yet, when retained in the manner stated, it may be the cause of severe and extensive hæmorrhage. When the embryo is expelled earlier than this, the part left behind is constituted chiefly by the decidua; and this substance may become thickened and hypertrophied to a very remarkable extent. A vaginal examination is always necessary in a case of suspected abortion. We must not rely too much on the assertions of patients. Sometimes clots only have come away, when it is stated that the abortion has occurred.

During the last three months of pregnancy, hæmorrhage now and then occurs from the placenta being attached partially or entirely over the mouth of the uterus—*placenta prævia*. The character of the hæmorrhage from placenta prævia is, that it comes on suddenly, and without external apparent cause, generally also without warning; that it is often very profuse, so much so as now and then to kill the patient before medical assistance can be obtained. The hæmorrhage ceases, or, at all events, only a very slight loss is sustained, and again recurs, perhaps; but the noticeable fact about it is its uncertainty. Practically, we draw the inference, that when, in the latter part of pregnancy, hæmorrhage suddenly occurs, the presence of placenta prævia is to be suspected; and, if we suspect it, it is our duty without delay to endeavour by examination to put the matter beyond doubt; otherwise the life of the patient may be imperilled.

Between hæmorrhage the result of an abortion, and of placenta prævia, there is this difference: in the case of abortion, the patient may or may not be aware of her pregnant condition, or, knowing her pregnant state, may have reason for wishing to mislead her attendant; in cases of placenta prævia, the patient is usually known to be pregnant.

Hæmorrhage may occur during pregnancy, and may be profuse, when there is nevertheless no implantation of the placenta over the os uteri; the cause being a separation to a slight extent of the placenta from the uterus. Such hæmorrhages have been called in obstetric language 'accidental,' as distinguished from the 'unavoidable' hæmorrhages the result of placenta prævia. An 'accidental' obstetric hæmorrhage may or may not be followed by

expulsion of the child. Further information on these latter points will be found in any standard obstetric work.

Hæmorrhage of irregular occurrence is noticed in cases of *mole pregnancy*, as they are termed.

Unusual discharge of blood *in a woman who has been recently delivered* may be due to *retention of a portion of placenta or membranes*, or to *inversion of the uterus*.

As regards the diagnosis of *cases of retention of a portion of the placenta or membranes*, there is not usually much difficulty. Hæmorrhage occurring within a few days after delivery would lead us to suspect that a portion of the placenta or a supplementary placenta, had been retained. It may happen, however, that the amount of hæmorrhage produced by the presence of the foreign body in the uterus may for some days be so inconsiderable as to attract no particular attention, may be considered as 'regular' by the nurse, and yet at the end of that time there may be profuse attacks of hæmorrhage. The facts relating to a case of this kind, which came indirectly under my notice many years ago, are strongly impressed on my memory; the hæmorrhage was postponed in the manner here alluded to for some days, was then severe and continuous, and the patient sank under its effects. In cases of retention of a portion of the ovum after abortion, which cases are not uncommon, the previous occurrence of such abortion should lead us to suspect the nature of the case. The portion of placenta or of the ovular membranes retained may be very small, and yet be sufficient to give rise to very profuse hæmorrhage.

Inversion of the uterus, partial or complete, is a *post-partum* condition capable of giving rise to severe hæmorrhage. Curiously enough, the existence of this condition is sometimes found to have escaped recognition for so long a time after the delivery that the diagnosis of the nature of the case has been rendered very doubtful.

Hence the necessity for calling attention to the fact that hæmorrhage, occurring some time after a particular labour, may be found to be due to this condition—inversion. As a rule, where the accident has escaped recognition, it is found that there has been hæmorrhage occurring at intervals ever since the delivery; that the hæmorrhage was at first very severe; that it gradually became less; that subsequently it assumed the character of excessive menstruation, the hæmorrhages for the most part occurring coincidently with the usual catamenial periods; that between these, however, great losses of blood had been often observed. The hæmorrhage

is not profuse and sudden in character, but it is a continuous drain going on for a certain time, and then ceasing partly or entirely. In such cases there is also profuse and purulent leucorrhœa. The symptoms, of course, date from a previous pregnancy; and, in nine cases out of ten, it is found that undue force was used in the removal of the placenta after the delivery in question. Polypus of the uterus gives rise to symptoms very closely resembling those of inverted uterus. Examination is, of course, necessary when the presence of inversion is suspected.

The cases next to be considered are those in which the loss of blood is *not connected with pregnancy*, or, necessarily at least, with menstruation, but in which there is some local or general condition present which determines the occurrence of the discharge. It must be recollected that many of the conditions in question do *also give rise* to profuse menstruation.

Here, perhaps, may be appropriately mentioned a rare cause of profuse loss of blood, viz. *the presence of a clot of blood in the uterus*. Thus, in a patient who is the subject of profuse menstruation, a portion of the blood coagulating in the uterus may give rise to subsequent very troublesome hæmorrhage, the source and cause of which would not be at once evident.

Hæmorrhages of severe and profuse character are produced by various organic diseases of the uterus, and under certain other circumstances also. These will now be enumerated, and their principal diagnostic features indicated.

Cancer of the Uterus.—Of this occasionally insidious, and very fatal disease, hæmorrhage to a greater or less extent is a prominent symptom, though not invariably so. The amount and periods of occurrence of the hæmorrhage vary according to the seat of the disease and the stage to which it has advanced. When a woman has entered on what may be called the 'cancerous age,' and begins to suffer from menorrhagia with occasional losses of blood besides, or when, having ceased to menstruate, hæmorrhages are observed, the possibility of this symptom being due to cancer must be recognised. Later, that is to say when the disease is more advanced, hæmorrhage is rarely the only symptom present, and we have generally much pain, an offensive sanious leucorrhœa, and constitutional disturbance. One point must particularly be recollected, that, for a certain time, hœmorrhage may be the only sign observed.

Thus, in a series of cases carefully observed by Dr. West, hæmorrhage was the first symptom in 43·9 per cent. of the cases.

In certain cases there may be an entire absence of the sign now under consideration, there being only profuse menstruation present. Another circumstance, also rare, but which may be subject of observation, is that the hæmorrhage is unattended with pain. In an instance noted by myself, the first occurrence of hæmorrhage was produced by sexual intercourse, the patient, aged 48, being affected with undoubted cancer.

Where the cancerous affection of the uterus is situated in an unusual locality, exceptional symptoms may be noticed. Thus, a case is related by Dr. Keating of Philadelphia,* where an enormous cancerous interstitial tumour of the uterus absolutely prevented delivery, in a patient æt. 30. The patient had had one attack only of hæmorrhage four years previously; menstruation had been contrary to what is usual in such cases, *scanty*. After death, it was ascertained that the menstrual discharge had been fœtid. The patient had, it is stated, a suspicious cachectic appearance.

Cauliflower Excrescence of the Os Uteri gives rise, as a rule, to hæmorrhages of an irregular character. The hæmorrhage is usually brought on by walking, by exertion of any kind, by coughing, sneezing, &c. There is usually offensive watery discharge present in cases of this disease. Its duration exceeds that of ordinary cancer of the uterus.

Corroding Ulcer of the Os Uteri, a rare affection, is attended with hæmorrhage, like that of ordinary cancer, of which disease it is probably only a variety.

Respecting the diagnosis of all cases of suspected cancer, there is this remark to be made, that careful digital examination is always necessary. Here the diagnostic significance of the hæmorrhage only has been alluded to.

Climacteric Hæmorrhages.—Side by side with 'cancerous' hæmorrhage, we may consider what have been called 'climacteric' hæmorrhages; practically, the necessity of separating cases of the latter from those of the former kind often comes before us. When the menstrual flow is finally about to cease, profuse losses of blood are apt to occur, and to recur at intervals for a considerable time.

In distinguishing these climacteric from cancerous hæmorrhages, the age of the patient does not help us, nor, indeed, can it be pointed out with ease what are the distinguishing features. In the nature of the blood itself, however, we find some data for

* *Am. Journ. Med. Sc.* Ap. 1861, p. 405.

diagnosis: thus, the blood is of a deep red and coagulable in hæmorrhages of simply climacteric origin; whereas in cancerous cases, unless it be, perhaps, at the very origin of the disease, the blood is fœtid and ichorous. Climacteric hæmorrhages are more often observed in sanguine temperaments, and in those who have been the subjects of profuse menstruation.

The menses may have ceased for a few months before the hæmorrhagic attacks; or the hæmorrhage may be periodic, resembling so far the ordinary catamenial discharge. When there have been hæmorrhages, recurring for some months, at about the period of sexual involution, we may presume, negatively, against the existence of cancer if there be no pain or offensive discharge; the absence of any marked deterioration of the general health would also, under such circumstances, be against the idea that such hæmorrhages were due to cancer.

Conversely, we must be careful not to confound hæmorrhages coming on a few months or a year or two after the cessation of the catamenial flow with climacteric hæmorrhages. The distinction between hæmorrhage due to cancer setting in subsequently to the cessation of the catamenia and climacteric hæmorrhage, may be, and often is, difficult; but a careful digital examination will generally decide the question satisfactorily.

The several kinds of *Polypi* of the uterus produce hæmorrhage, often very severe, and sometimes of an ultimately fatal character. The abundance of the hæmorrhage is not by any means in direct proportion to the size of the polypus, but depends rather on the degree of vascularity present. The hæmorrhage is irregular in character, and, coinciding more or less with the menstrual discharge, as it frequently does, it may be at first overlooked; its tendency is to increase in quantity, but the march of the symptoms is slow, and if the loss be not considerable, the general health may remain little affected. A most important class of cases are those in which polypi, entirely within the uterus, occasion severe hæmorrhage, the cause of the hæmorrhage escaping recognition owing to the absence of dilatation of the os uteri. Sir J. Y. Simpson was the first to point out the necessity for exploring the interior of the uterus, by dilatation of the os uteri, where the cause of the severe menorrhagia is only explainable on the supposition that a polypus is present. When the polypus becomes very large, 'pressure' signs, such as difficult micturition, difficult defæcation, accompany the enlargement of the uterus which results. Abortions are frequently due to

the presence of uterine polypi. Clots or partial moulds of the uterine cavity are found sometimes in the discharges. With reference to the kind of polypus present, the nature of the hæmorrhage gives us no precise information. Very profuse hæmorrhage sometimes results from very small tumours—'mucous' polypi, as they have been called—situated just inside the os. In cases of polypus uteri, there may be profuse leucorrhœa, and there may be much pain; but the leucorrhœa is not, except in rare instances, offensive, as it is in cancer, and the pain is of a different character. Moreover, the patient with polypus may, comparatively speaking, remain *in statu quo* for some time—an observation which does not apply to cancer. Cases are not rare in which uterine polypi remain for years undetected, the hæmorrhage, by its long continuance, finally sapping the very foundations of life, the skin becoming etiolated and withered-looking, and the patient reduced to an extreme state of feebleness.

Fibroid tumours of the uterus, which have a composition identical with that of fibrous polypi, both being but growths of the uterine tissues, may or may not cause hæmorrhage, the position of the tumour very much affecting this result. Thus, if the tumour project into the cavity (sub-mucous variety), the result, as regards the hæmorrhage produced, will be pretty much the same as if a polypus were present. The further the tumour is from the mucous membrane, the less frequently, as a rule, does hæmorrhage occur. The early stages of these growths may be unattended with marked symptoms; hæmorrhage may be entirely absent. Menstruation is rendered excessive, both as regards duration and as regards the quantity poured out: this symptom may go on for some time without attracting attention, when, sooner or later, other symptoms, interperiodic hæmorrhages, abortions, &c., are usually observed. When these fibrous growths attain a very considerable size, they often produce pressure signs, as in the case of large polypi. The hæmorrhage produced by the presence of fibroid tumours is often accompanied by a good deal of pain, and the pain is spasmodic, somewhat resembling pains due to abortion. Cases of abortion are distinguished from cases of fibrous tumour with hæmorrhage by the circumstance that the pain and the hæmorrhage cease together in the former instance, but not in the latter. In the case of hæmorrhage suspected to have its origin in the presence of uterine polypi or fibroid tumours, a careful examination is necessary; the uterus must be examined both from the vagina, and through the abdominal walls.

Granular Condition of the Mucous Membrane of the Uterus.—In certain cases, profuse menstruation is connected with an altered condition of the mucous membrane of the uterus, characterised by the presence of fungus-like vegetations on the surface.

Tubercle of the Uterus.—We should expect, in a case of uterine hæmorrhage from this cause, to have evidence of the presence of tubercle in other organs, and of the constitutional effects thereof. Pathologically, tubercle of the uterus has been usually supposed to be rare; but hæmorrhage from the uterus in tuberculous women, dependent on the state of the blood rather than on organic local changes, is not so uncommon.

Enlargement of the uterus, due to chronic congestion, or defective involution after delivery, is very frequently indeed associated with menorrhagia, and there are few ordinary cases of profuse menstruation in which this condition of the uterus is not present. The organ is larger than usual, its tissue is less firm, it is unduly congested and, as already stated, it is frequently altered in shape (see p. 32). The subjects of this condition of the uterus are generally very much debilitated and out of health, and they are very liable to pain in the pelvis and in the region of the uterus; they very commonly, also, suffer from profuse leucorrhœa.

Hypertrophy of the cervix uteri, the cervix being converted into a large rounded tumour projecting low down in the vagina, or even beyond it, may give rise to hæmorrhage and other serious inconveniences. The symptoms closely resemble those of polypus uteri, and the condition has been frequently confounded with polypus or prolapsus of the uterus.

Another form of disorder liable to produce hæmorrhage is *prolapsus—descent of the uterus*, in the pelvic cavity, or even externally beyond the vulva. It is a condition of which hæmorrhage is not, by any means, one of the most marked symptoms, occurring, as it does, only in a small proportion of the cases; but now and then the loss of blood is certainly considerable.

Peri-uterine Hæmatocele.—Cases in which there is an *abrupt appearance of profuse menstruation* require a special mention. A sudden attack of this kind has been found, in a certain number of cases, to be associated with a most dangerous and alarming accident, the pouring out of blood in the pelvis, in the neighbourhood of the uterus, either into the peritoneal cavity or into the cellular tissue beneath the peritoneum, giving rise to the formation of a tumour—*peri-uterine hæmatocele*—and the production of a series of symptoms of a highly interesting and important

character. The sequence and intensity of the symptoms, of course, vary in each case; they often present themselves in the following order:—Previous good health, as regards menstruation, abrupt appearance of a considerable flow of blood from the uterus at a menstrual period, great pain in the abdomen, and symptoms as of perforation, a blanched condition of the skin, and all other signs of violent hæmorrhage, syncope, &c. The patient may die from the actual loss of blood effused under these circumstances into the peritoneum, or from the effects of the subsequent changes in the clot there formed. The accident termed peri-uterine hæmatocle is not always accompanied by profuse menstruation; indeed, it very frequently happens that at the time of the occurrence of the internal hæmorrhage, the external discharge is not observed. The most common case is perhaps that in which menstruation, having been generally and for some time rather profuse, becomes for a time either suppressed or much less than usual; the symptoms of internal hæmorrhage then suddenly appearing. The peri-uterine hæmatocele is not, it must be recollected, the *cause* of the excessive menstruation. The cause of both the excessive menstruation and the hæmatocele will be found in some predisposing general condition of the patient, or some previously existing change in the ovaries, tubes, &c., or both general and local disease combined. Irregularity of menstruation of some kind or other generally precedes the attack, and the practical fact to bear in mind is, that a suddenly occurring attack of profuse menstruation may be associated with this dangerous accident. The presence of peri-uterine hæmatocele—that is, of the tumour constituted by the effused blood near the uterus—is to be ascertained by vaginal and by abdominal examination. The tumour so formed is often of very considerable size.

DIAGNOSIS.

The nature of every case must be adjudicated on its own merits. The foregoing account of the pathology of menorrhagia and metrorrhagia furnishes certain details on the subject. It must be needless to point out that a careful examination of the condition of the uterus and generative passages is essential, according to the methods described in other chapters.

In cases where unusual losses of blood have occurred, a very important part of the duty of the practitioner consists in the investigation and examination of the various substances, clots of blood

and the like which have been expelled. The diagnosis of the nature of the case is frequently intimately connected with a correct estimation of the nature of those expelled substances.

Here then it may be well to call attention to the discrimination of the various *substances expelled from the generative organs.*

An off-hand opinion ought never to be given respecting the nature of any substance said to have been expelled from the generative passages. A careful examination of the case should always precede a conclusion as to its nature. It need hardly be observed that, in order to institute a proper examination, an intimate practical knowledge of the normal *anatomy* of the ovum, and a familiarity with its outward appearance, on the part of the observer, are absolutely essential.

From a variety of circumstances, the substances in question are frequently difficult of recognition; and it is always expedient to place them in water for twenty-four hours, or even longer, at the end of which time they will be in a much more satisfactory state for examination. The importance of adopting this precaution in the examination in cases of suspected abortion it is impossible to over-estimate. What appears on a cursory inspection to be a homogeneous fleshy mass may, after having been soaked for some hours in water, present a most elaborate structure. Great care must be exercised in receiving the statements of patients as to the nature of any particular substance which may have been expelled. Many are desirous of deceiving and giving erroneous impressions, but a much larger class are incapable of describing accurately what they do see. Ocular inspection of the specimen by the practitioner himself, and under the favourable circumstances just alluded to, is absolutely necessary, if the diagnosis is to be anything beyond conjecture.

In the very practical and valuable work of Dr. Montgomery, the substances which may be expelled from the generative passages are enumerated as follows:—'1, an early ovum; 2, a mole; 3, uterine hydatids; 4, the membrane produced in dysmenorrhœa or other conditions of uterine derangement; 5, membranous formations from the vagina.' This does not, however, include all the substances which may present themselves to be examined and reported on; and the arrangement here adopted will be somewhat different from that of the author just alluded to.

Fleshy substances.—The various 'fleshy' substances presented for examination are:—1, an ovum cast off at an early period of its growth, or arrested in its development, and retained in the

uterus, constituting what is popularly known as a *mole*; 2, the placenta, or a portion thereof, retained for a time, and subsequently expelled; 3, polypus of the uterus spontaneously detached and expelled; 4, fibrous tumours of the uterus similarly separated; 5, coagula of blood.

1. *An early ovum.* If any portion of the body or members of the fœtus be found in the mass expelled, there can, of course, be no doubt in the matter; we have to do with an abortion. When no part or parts of an embryo are to be found, we proceed to search for one of the following structures: the decidua materna, or external envelope of the ovum; the decidua reflexa, internal to the latter; the chorionic villi; the umbilical cord, &c.

After soaking the specimen in water, it should be carefully examined in that fluid, a blunt probe and forceps only being at first used in manipulating. In ova which come away *en masse* (a rather rare occurrence) during the first three months or so of pregnancy, the external covering will be the *decidua materna*; and this membrane is recognised by its ragged uneven appearance under water, by the presence of those bodies described first by Dr. Montgomery as 'decidual cotyledons' on the external surface, by its pyriform shape, and by the fact that there are three openings —two superiorly, corresponding to the Fallopian tubes; and one inferiorly (which latter may, however, be closed), corresponding to the neck of the uterus. The decidua is further characterised by the smooth and velvety appearance of that surface of it which is internal, and by the fact that on this surface many minute openings, just visible to the unassisted eye, are perceptible, giving the membrane a cribriform appearance. After the fourth month, this membrane is found thinner, and some of the characters just alluded to are less marked. This decidua may come away by itself, torn or separated from the ovum, or filled with the degenerated structures of the ovum.

The *decidua reflexa* is a fibrous membrane thinner than the decidua materna; and it encloses the ovum proper in great part. The most characteristic structure of the ovum is, however, the *chorion membrane*, with the *villi* which grow on its external surface. The early ovum, separated from the decidual coverings, is a closed bag covered by little delicate processes, the villi of the chorion, giving to it a shaggy appearance. In a very early ovum the villi are small and simple; but in a more advanced ovum—of two months, for example—each original villus is found to have given off branches arranged somewhat like the branches of a stem

of coral. Later still, these villi are longer, and they are then found *on one side only* of the ovum; those on the other side, not participating in the development described, shrink and almost completely disappear. The presence of chorion villi may be considered quite conclusive as to the fact of impregnation and previous conception, whether the embryo be found or not; but it is a question whether the same degree of diagnostic value attaches to the presence of the decidua materna, it being the fact that *a membrane* may be expelled from the uterus quite independently of conception, and possessing many of the characters of the decidua as above described (see chapter on Dysmenorrhœa). In the decidua resulting from pregnancy, the decidual cotyledons are present; but not in the other. This is the best distinction which can at present be given; but, from examination of certain specimens, I have come to the conclusion that cases might arise in which this means of distinguishing them might fail.

If a small sac were found having attached at a point of its internal surface the remains of the umbilical cord, this would be conclusive on the question of impregnation. In the case of early ova expelled from the uterus, one of the several results may be observed. The ovum enveloped in the decidua may come away entire; the decidua may remain behind for a time; and the chorion membrane covered by its villi, and enclosing the embryo, be expelled by itself. The chorion and amnion may remain *in utero* as well as the decidua, the embryo escaping from the uterus. In such a case, the membranes, fœtal and maternal, would be expelled subsequently.

Moles.—The various substances known under the designation of moles, and which are the products of conception,* are for the most part the result of arrest of development, which may coexist with continuance of growth of some portion of the ovum. It is very important to be aware of the fact, that an ovum, or some part of it, may remain in the uterus for a very considerable time, growing in an irregular abnormal manner, or just preserving a low form of vitality. A practical instance will show the importance of this knowledge. A woman having lost her husband five or six months may have an attack resembling an abortion, and there may be expelled a substance which the observer believes to be an ovum of two months, whereas it turns out, on examination by a more competent hand, to be a mole, the product of a conception

* It seems proper to confine the use of the term 'mole' to the products of conception alone.

previous to the husband's death. The 'fleshy mole,' as it is termed, consists of an ovum between the membranes of which blood has been effused. The blood effused has coagulated, and the result is a mass the parts of which are glued together and separated with difficulty. The villi of the chorion must be carefully sought for; and they ought to be found in all cases where there is no reason for suspecting that the ovum, with its chorionic investment, has previously escaped. The presence of organised membranes and chorion villi distinguishes the 'fleshy mole' from simple clots of blood, and from other substances presently to be more particularly considered. It must be recollected, that the chorion villi do not become developed so as to constitute a placenta until near the fourth month of gestation. It is difficult to imagine that a fœtus which has lived until the placenta has been formed could undergo a process of complete absorption, but there are very numerous cases on record to show that degrees of development of the chorion villi short of the production of a placenta frequently coexist with entire absence of the embryo, which in such cases perishes at so early a period that its size is very inconsiderable; and it then escapes detection.

There is another kind of true mole, the 'hydatidiform' or 'vesicular' mole, a description of which will be given presently.

2. *The Placenta.*—The fleshy mass expelled may be a part or the whole of a 'placenta.' When a woman has been delivered at or near the full time, and no placenta has come away, a fleshy-looking mass expelled a week or two after would in all probability be the placenta; and in such a case the signs of previous delivery would be present, the history of pregnancy, &c. The size, shape, &c., of the mass, and the presence of the umbilical cord, would externally indicate it to be the placenta. The expulsion of a retained placenta is, at least when the retention has existed for some time, usually preceded by an offensive discharge; but the placenta has occasionally been discharged apparently fresh, and without signs of decomposition.

Such cases are rarely open to much chance of misconception; but the nature of the case is not so obvious when the fœtus has been expelled at an earlier period of gestation. In cases of abortion at the fourth or fifth month, the placenta may be retained for some time, its removal not having, for some reason or other, been effected at first. Cases are on record which show that the placenta may be retained within the uterus after abortion for months and even years. An instance in point is quoted by Mont-

gomery from Morgagni.* More than one case of the kind has indeed come under my own observation. Meanwhile, its presence in the uterus has generally occasioned severe hæmorrhages. An early placenta would be about the size of a pigeon's egg; later it would be larger. If recognised as a placenta, it would indicate a previous conception. The substances which might be mistaken for a placenta are a fibrous tumour spontaneously expelled, or a fibrous polypus similarly removed; and in both cases the symptoms, hæmorrhages, &c., might be somewhat alike. In order to settle the point, the structure of the fleshy mass must be carefully examined, if evidence as to previous pregnancy be wanting, or if that which is obtainable be open to suspicion. An early placenta is rounded, rough on one side and smooth on the other. The presence of the umbilical cord attached to one side of it would be conclusive; but this might be worn away or torn off close to the placenta. A section of the mass would, however, show vessels arranged in a peculiar manner, radiating from the centre of one surface.

3 and 4. *Fibrous Polypi* of the uterus and *Fibroid Tumours* are sometimes expelled spontaneously from the uterus. Externally, these bodies might be easily confounded with a placenta, the more especially as the preceding hæmorrhages might be considered evidence of abortion having occurred. Polypus of the uterus and fibroid tumours frequently produce abortion; and in certain cases abortion may occur in the first place, and the expulsion of the polypus which gave rise to the abortion in the second. This sequence happened, as I had reason to know, in a case under the care of a gentleman in the country; and the polypus which came away was considered, until after it had been more carefully examined, to be the placenta. The structure of a polypus or of a fibrous tumour differs widely from that of the placenta, the former presenting a fibrous texture, generally dense, and sometimes very firm; but now and then, in the case of a polypus, more spongy and loose. The insertion of the umbilical cord would be, of course, wanting. Fibrous masses containing fatty matter within them, which I believe are instances of *fatty degeneration* of fibrous tumours or polypi of the uterus, are sometimes spontaneously expelled, as in a case which I have placed on record,† or solidified by *calcareous matter*. Generally, we find a previous history of

* *Op. cit.* p. 259.

† *Trans. of the Pathological Society*, vol. xi. p. 173.

'frequent and severe hæmorrhages' when these uterine outgrowths have been expelled. The spontaneous expulsion here alluded to is not a frequent termination of their history. Masses of cancerous growths, in some rare instances, slough away and appear externally. The cancerous disease is usually far advanced in such cases, and a digital examination would reveal the origin of the expelled body.

5. *Coagula of blood* (blood-polypi) retained within the uterus for some time, and expelled subsequently in a more or less firm condition, require to be discriminated from the bodies hitherto alluded to. Coagula may form within the uterine cavity in connection with uterine hæmorrhage of all kinds; after labour, in consequence of the presence of polypi, cancer of the uterus, profuse menstruation, &c. The uterine cavity is not, as a rule, very tolerant of the presence of clots: and for this reason they do not generally remain there sufficiently long to have become firm and dense. They are frequently connected with previous abortions. The manner in which blood polypi sometimes form is shown in the accompanying drawing of a 'Polypoid Hæmatoma' following an abortion at the second month. The remains of the chorion strictures attached to the uterus form the pedicle of a mass consisting of blood-clot, the whole assuming a polypoid form.* When the coagula are tolerably recent, they are easily broken down under pressure, or after soaking in water. Fibrous organised bodies are not to be broken up in this manner. When polypi of the uterus are present, coagula sometimes come away having a circular form like segments of rings. The polypus at the same time excites hæmorrhage and prevents the escape of the blood; and the rings in question are thus formed. Coagula not recent may present a tolerably

Fig. 75.

* Copied from Virchow's *Krankhaften Geschwülste*, Band. i. p. 146.

firm, dense, greyish, fibrinous-looking surface. The want of organisation in the mass, the presence of blood-corpuscles, would assist in the diagnosis of the nature of the substance. The centre of the mass, moreover, generally exhibits a clot of a darker colour, comparatively unaltered, which was the original nucleus of the formation.*

In respect to the size and shape of clots of blood expelled from the vaginal aperture, some peculiarities are sometimes noticed. Thus, in a case which recently fell under my observation—that of the sister of a medical man—a large clot of blood, having the size and shape of the vagina, had been occasionally expelled, after much straining and pain, at the menstrual periods. It was found that the aperture of the hymen was excessively small, and, the discharge of blood being more profuse than usual, an accumulation and coagulation of the same in the vagina had occurred.

Membranous Formations.—*Bodies more or less resembling 'skin'* may be conveniently considered together under this designation. The skin-like substances in question may have their origin in the vagina or in the uterus.

1. *Exfoliations from the Vagina.*—Under certain circumstances the lining membrane of the vagina separates in the form of thin translucent flakes, which sometimes come away in great quantities. Dr. Tyler Smith † designates that condition of the vagina present in cases of this kind as 'epithelial vaginitis.' The flakes in question are composed of the scaly epithelium of the vagina, and under the microscope exhibit the well-known appearances of this form of epithelium. It is necessary to place them in water in order to render obvious the characters of these exfoliated products.

2. *The Dysmenorrhœal Membrane* ('menstrual decidua,' Farre).—This is an exfoliation of the lining membrane of the uterus—a sort of skin occasionally expelled from the uterus, independently of conception, after a catamenial period, and exhibiting a certain degree of resemblance to the decidua lining the uterus during pregnancy. The membrane is neither more nor less than the mucous membrane of the uterine cavity, hypertrophied and cast off. I have no doubt that, normally, the mucous membrane of the uterus becomes thickened, softened, and cast off at every menstrual period; but ordinarily the membrane in question appears to be too thoroughly broken up for even shreds to be left. Under

* See an account of some specimens reported on by myself in *Trans. of Path. Soc.*, vol. xv. p. 169.

† *On Leucorrhœa*, p. 57.

the influence, however, of certain conditions, the nature of which is at present not perfectly understood, but which probably have the effect of setting up a sort of chronic inflammation of the lining membrane of the uterus, the mucous membrane of the uterus becomes sometimes greatly more thickened than usual, and being, in accordance with the ordinary rule, thrown off, it is presented externally. This is what appears to take place in these cases of membranous dysmenorrhœa. The membrane in question is smooth internally, rough and slightly flocculent externally. When thrown off in a single piece, the membrane presents three apertures, corresponding to the apertures communicating with the uterine cavity, and is of a pyramidal shape. It is expelled during the catamenial flow, which, as a rule, is more profuse than usual. It is unlike the vaginal exfoliations just alluded to, being very much thicker. The distinction of this dysmenorrhœal membrane from the decidua of an early ovum might, under certain circumstances, be difficult, as already stated, viz., when the supposed decidua is unaccompanied by any part of the chorionic structure. The concomitant circumstances will assist in the diagnosis: thus the 'dysmenorrhœal membrane' is not expelled at one catamenial period only, but on successive occasions; whereas, in the case of an abortion, the same thing is not likely to occur, or, at all events, with the same marked periodicity. See chapter on 'Dysmenorrhœa.'

3. *The Covering of the early Ovum.*—Portions of the decidua materna, the decidua reflexa, the chorionic sac., &c., may come away in the form of membranous substances. It is unnecessary here to repeat what has been already stated as to the diagnosis of the nature of these bodies.

4. *Exfoliations from the Bladder.*—The coats of the bladder have in rare instances been expelled; in cases related by Mr. Spencer Wells and others, the whole lining of the bladder appears to have sloughed and to have come away by the urethra.

Vesicular Bodies.—*The Hydatidiform or Vesicular Mole.*—Little bladder-like substances, singly or connected in series like beads, may be expelled from the uterus. These bodies were formerly considered to be hydatids formed in the uterus. They really result from certain alterations of the chorion villi, and they are always the result of conception. The embryo perishes at an early period, and the chorion villi continuing connected with the uterus maintain a slow growth, the *development* being arrested. The vesicular bodies are thus the result of dropsical swelling of the chorion villi. It appears that the period of pregnancy during

which the chorion villi may take on this peculiar form of degenerative growth is limited, probably not later than the middle or end of the third month. If the embryo perish after the chorion villi have become pretty intimately connected with the decidua serotina, but before the placenta has become formed, while the villi are allowed still to retain a certain degree of connection with the

Fig. 76.*

uterus, they may continue to grow; but *development* is arrested, and the bladder-like bodies are the result; such, at least, is my explanation of the formation of these bodies. Some eminent authorities consider it a disease of the villi *ab initio*.

With the presence of the vesicular mole watery discharges are occasionally associated. The mole in question may attain a considerable size, and may remain several months in the uterus, a few of the bladders from time to time breaking and discharging fluid from the os uteri. The mass may come away altogether, or clusters of the vesicles may be expelled at intervals.

True hydatids may in very rare instances be expelled from the generative passages. They originate in the abdomen, bursting into this cavity from the liver; and they may penetrate through the uterus, or into the vagina. True hydatids are closed sacs one within another; while the vesicular bodies resulting from chorionic transformation are arranged in a series like beads on a string

* The drawing is a magnified representation of an early stage of the hydatidiform degeneration of the ovum, and exhibits very accurately the relations of the vesicular bodies, *b*, to the chorionic membrane, *a*, and the decidua serotina, *c*. For further illustrations, see my papers in *Obst. Trans.*, vols. i. and ii.

with slender peduncles or intervening connecting portions. The well-known 'hooklets' are usually found when the cysts are really of hydatid origin. I have met with a case in which, death having occurred, several hydatid cysts were found in the abdomen, the pelvis, &c., and, had life been prolonged, some of these might have burst into the vagina or uterus. In the case in question, the patient was a young unmarried woman. I have also met with one case of true hydatids of the uterus, in which the organ contained bodies of undoubtedly hydatid character.

Factitious Bodies.—Lastly, the observer must be cautioned as to the occurrence of cases in which, for a variety of reasons, women exhibit substances which they are desirous of leading the practitioner to believe have been expelled from the vagina. The careful examination of the bodies in question is, or should be, sufficient always to enable us to detect the fraud.

GENERAL TREATMENT OF PROFUSE MENSTRUATION.

Nothing, of course, is more unsatisfactory than treatment conducted without due appreciation of the precise state of things present. Hence an exact diagnosis is the foundation of success in regard to results.

In some cases the circumstances of the case do not appear to require an exact diagnosis, and general treatment only is then applicable. Where, however, local tangible disease is present, general as well as local measures are requisite. We may, therefore, consider in the first place what these general measures should be.

If the blood be impoverished, the patient must be strengthened, the general health improved by careful hygienic measures, by good food, pure air, exercise, &c. Any special predisposing cause, the detection of which may require very careful scrutiny of the habits and previous history of the patient, must be removed. If, for instance, the patient be living in a malarious neighbourhood, the residence must be changed. In cases where there is great torpidity of the system, congestion of the abdominal viscera, a loaded state of the bowels, and unhealthy state of the secretions generally, what may be termed a derivative plan of treatment, consisting in administration of brisk purgatives and such medicines as are known to excite action of the liver and chylopoietic organs generally, is effective. In cases of great debility iron is necessary. A mixture containing very small doses of sulphate of magnesia, with a little dilute sulphuric acid and syrup, is exceedingly useful during the days of the profuse catamenial flow.

In cases due chiefly to general debility, from whatever cause, tonics and purgatives must be given together. For such, a colocynth and rhubarb pill twice a week, with iron and sulphate of magnesia in small doses, two or three times a day, may be recommended. To promote the action of the skin, to insure regular action of the bowels, and to improve in every possible way the general health of the patient, is to do pretty nearly all that can be done in the general treatment of ordinary cases of profuse menstruation not dependent on some physical derangement of the uterus.

The general treatment is particularly important in cases of women who have resided in tropical climates, such as India. The uterus and pelvic organs generally are found in such cases in a state of chronic congestion, there is profuse menstruation together with leucorrhœa, and not seldom flexions are present. The flexion, of course, requires special treatment, but the general condition of the patient requires in such cases careful management. The only means of successfully dealing with these cases is to carefully supervise the performance of the functions generally, and especially those of menstruation, fecundation, &c., and to remove, by appropriate treatment, the diseased condition of the uterus, which is the cause of the symptoms.

When the circumstances of the patient admit of it, and the case is an obstinate one, great advantage will be derived from residence at a watering place, where, for a variety of reasons, hygienic measures are better enforced and more easily carried out than at home. The remedies considered necessary, aperients, tonics, &c., are more efficacious also when administered in the form of mineral water. In selecting the spa, regard must therefore be had to the peculiar condition of the patient, and the cause of the menorrhagia. (See 'Treatment of Chronic Inflammation of the Uterus.')

The external employment of baths is of the greatest service. The cold hip bath is frequently the means of keeping patients in health who would otherwise suffer constantly from profuse menstruation; its good effects are especially noticeable at the climacteric period. The daily use of the sponge bath is strongly to be recommended, the skin being rubbed all over by means of a rough towel for some minutes afterwards. The Turkish bath may be used in the treatment of certain cases of menorrhagia in which there is defective activity of the skin, and in which sufficient bodily exercise cannot, for some reason or other, be taken.

In all cases where the uterus and pelvic organs are in a congested condition, the use of the vaginal douche is of most valuable assistance in the treatment. The means of applying this remedy will be found described in the chapter on Leucorrhœa.

It is of extreme importance to regulate the conduct of the patient at the menstrual periods. For two or more days previous to the expected period, and during the time at which the discharge is going on, the patient must be directed to remain as quiet as possible, and chiefly in the recumbent posture. The clothing must be light, the room should be cool. The bowels must be kept regularly open, and stimulant articles of food, as well as excessive eating and drinking, must be avoided. Sexual intercourse is to be prohibited. By adopting these simple precautions, much will be effected in diminishing the amount of the discharge.

Dr. Chapman has introduced a method of treatment which has in some cases proved of service in cases under my own observation, viz., the application of cold to the spine by means of ice-bags. The cold acts directly on the spinal cord and indirectly on the uterus, leading probably to a contraction of the whole organ, and thus lessening the hæmorrhagic discharge.

In some few cases the loss of blood has been, or continues to be, so profuse that it is necessary to arrest it in a more summary manner, the patient has become so reduced that a further loss of blood is likely to be attended with grave inconvenience. For the treatment of this form of profuse menstruation, the general preventive means hitherto spoken of are applicable, and their application is most important; but something more is needed. In extreme cases it is necessary to arrest the further flow of blood in a mechanical manner, i.e. by plugging the vagina. This will be best effected by inserting, by means of the duck-bill speculum, a piece of lint dipped in infusion of matico or tincture of sesquichloride of iron, or, which is still better, a saturated solution of perchloride of iron in glycerine, and one or two yards of wetted bandage, carefully packed in the vagina. This form of plug is very easily managed, as it admits of a portion, or the whole, of it being easily withdrawn. The bandage should be previously wetted by being squeezed out of cold water. The patient must be directed to remain in the recumbent posture; cloths dipped in cold water should be laid over the pelvic region and removed and reapplied from time to time; or a cold wet napkin may be flapped upon the abdomen, so as to produce a sudden shock. Injection of cold or iced water into the rectum is also a most valuable means of

arresting the flow of blood in bad cases of this kind. The object is to produce contraction of the uterus, for that organ is relaxed, congested, and in a condition very much resembling that which is present after labour.

The internal remedies to be made use of are, firstly, those which are known to induce contraction of the uterus; secondly, those which are known to have the power of arresting hæmorrhage—styptics, as they are termed. Ergot of rye and ipecacuanha have been found serviceable in cases of *post-partum* hæmorrhage; and they are applicable in the treatment of the severer forms of profuse menstruation also. I have myself had great success with the ergot, when all other remedies had markedly failed. A decoction of the fresh powder should be taken three times a day. Styptics are frequently found very serviceable; of these matico in combination with tincture of iron, or the latter alone in large doses (thirty to forty minims), are strongly recommended. Gallic acid and diacetate of lead may be also employed. Opium is a remedy which has been highly extolled in cases of profuse menstruation, as also in hæmorrhages generally, but it does not appear to be adapted for chronic cases. Of late, attention has been directed to digitalis administered internally as of peculiar efficacy in the treatment of profuse menstruation, but the results obtained in cases where I have tried it have not been altogether encouraging. The tincture of cannabis indica is recommended by Dr. M'Clintock as a good hæmostatic. In passive menorrhagia, Beau recommends rue and savin, in doses of rather less than one grain each.

In severe cases of profuse hæmorrhage, while measures are being taken to arrest the discharge of blood and to prevent further hæmorrhage, it is necessary to support the patient by administering stimulants and nourishments internally. The requirements in individual cases vary according to the urgency of the symptoms. Brandy and beef-tea must be given frequently, but in small quantities at a time. It is possible to conceive a case—indeed, such are on record—in which transfusion may be necessary, and where the patient's life may be prolonged, if not saved, by timely recourse to this procedure.

It does not very often happen that a patient perishes from hæmorrhage due to simple profuse menstruation, but there are many cases where life, if not abruptly cut short, is materially abbreviated by the long-continued weakness and prostration thereby induced.

TREATMENT OF MENORRHAGIA OR METRORRHAGIA DEPENDENT ON ORGANIC OR OTHER DISEASE OF THE UTERUS, ETC.

The treatment is palliative or curative, one or both, according to circumstances. The case may or may not admit of absolute cure. When not curable, much may often be done to diminish the loss of blood at the menstrual periods by giving the patient directions as to her conduct during the time in question. Thus, in cases of cancer, cases of fibrous tumour, cases of flexion, &c., where it may not be proper, for a variety of reasons, to resort to more radical measures, rest, the horizontal position, careful diet, and the systematic application of this system of treatment at and during each successive menstrual period, will do much to lessen the amount of the loss of blood. It is in these cases, also, that we occasionally find it necessary to apply measures for at once arresting the discharge of blood, and which have been already pointed out. The discharge of blood may, under such circumstances, be such as to amount to a regular hæmorrhage, and must be treated as such; but, whatever be its cause, the amount of the discharge may be always very considerably reduced by the preventive and palliative measures which have been already alluded to.

With reference to the *curative* treatment of these cases of unusual discharge of blood from the uterus, and which are connected with the presence of organic or other disease, we must be guided by the circumstances of the case. The proper radical treatment of the various pathological conditions of the uterus, &c., are elsewhere discussed under their proper heads. At present, some general observations will be made in reference to the treatment of these cases, so far as the hæmorrhage is concerned.

The loss of blood produced by the presence of organic or other disease of the uterus is often such as to necessitate the absolute removal of the cause of the discharge in order to save the patient's life. This is more particularly the case where polypus of the uterus, a disease which is generally removable without any great amount of difficulty, is present. Here it is to be remarked, that a minute mucous polypus growing just within the os uteri has been known to give rise to severe hæmorrhage; a pedunculated growth of this kind may occasion more hæmorrhage than a polypus of considerable size; and hence operations are demanded in order to restrain the hæmorrhage, with varying degrees of

urgency in different cases. Respecting the treatment of diseases of the uterus, giving rise to hæmorrhages and to profuse menstruation, one or both, it must be stated that the hæmorrhage is not generally the only reason for deciding on operative or other measures for their removal.

In some cases our decision as to treatment will be affected by this consideration. The patient may be fast approaching the end of menstrual life, and it may be expected that the hæmorrhage, with the profuse menstruation, will disappear at the end of a short period. Such a view of the case may present itself to us where there are fibrous tumours in the uterine wall, projecting, perhaps, into the cavity of the uterus, and giving rise to the symptoms now under discussion. In many such cases, symptoms which, during menstrual life, are of great severity grow less, and the patient, while retaining her disease, finds the inconveniences for the most part vanish with the arrival of the last menstruation.

The remarkable success which attends the treatment of menorrhagia dependent on flexion by simply straightening the canal calls for special mention in this place. (See chapter on Flexions.)

The severe hæmorrhages produced by fibroid tumours not seldom appear to depend more on the obstruction to escape of blood from the uterus rather than to the irritations of the growth itself. Hence I believe the operation of incising freely the cervix uteri serviceable in certain cases.

In cases where the unusual loss of blood follows the occurrence of abortion, or in cases where there is reason to believe that abortion has, or may have, recently occurred, the first thing to be done is to ascertain whether any portion of the ovum or of its membranes remain in the uterus, and if anything be there found to remove it. Experience has shown that the retention within the uterus of a very small portion of membrane is sufficient to give rise to considerable and continued loss of blood. Where the os uteri is so closed that the finger cannot be easily introduced, it must be slowly and carefully dilated. The best method of dilating the os uteri for this and other purposes will be particularly described in the chapter on Dysmenorrhœa. The consideration of the treatment appropriate in such cases, however, falls more properly within the province of midwifery. It is sufficient here to insist on the necessity for completely emptying the uterus to check the hæmorrhage proceeding from this cause.

The treatment of obstinate menorrhagia by application of tincture of iodine or other caustic agents to the lining membrane of

the uterus has found favour with some practitioners. The supposed good results depend, I imagine, more on the dilatation of the cervical canal (implying straightening of it), which is regarded as an essential part of the procedure by Dr. Routh, Dr. Savage, and others, than on the procedure itself. The plan to be pursued is first to dilate the cervix uteri by tents, and sufficiently so to allow of the styptic or caustic fluid easily running back through the cervix after being injected into the cavity of the body of the uterus.

CHAPTER XVI.

DYSMENORRHŒA AND OTHER PAINS REFERABLE TO THE INTERNAL GENERATIVE ORGANS.

Meaning of the Term—Pathology—Essentially a Symptom indicative of Obstruction to Escape of Menstrual Fluid—Seat of the Obstruction, mostly at the Internal Os Uteri—Modus Operandi of Obstruction at this Position—Severity and Intensity of the Pain—Nausea and Vomiting accompanying Dysmenorrhœa—Causes of Obstruction at various parts of the Canal of the Uterus Enumerated—Membranous Dysmenorrhœa.

Pain during Menstruation due to other Causes than Obstruction to Escape of Menstrual Fluid—Disordered Ovulation—Rheumatic Diathesis—Neuralgia.

Diagnosis of Nature and Cause of Pain referable to the Internal Generative Organs, including Dysmenorrhœa.—A. Pains associated with Menstruation. B. Pains not associated with Menstruation—General Remarks.—Four principal Situations: 1. The Back. 2. The Groins. 3. The Hypogastric Region. *a.* Intermittent. *b.* Constant. *c.* Inflammatory in Character. *d.* Acute, Intense Sudden Pain. *e.* Hysterical. *f.* Bearing-down. 4. Pains in the Lower Extremities—The various Causes of the Pains in these several Situations considered from a Diagnostic Point of View.

Treatment.—Palliative Measures—Curative Treatment; Mechanical Treatment—1. Rectification of Shape of Uterus. 2. Dilatation. 3. Incision of Canal—These Methods Compared—Their Applicability to the various Cases pointed out—Methods of effecting Dilatation—Operation of Incision—Use of Stem Pessary—Treatment of Imperforate Os Uteri—Treatment of Membranous Dysmenorrhœa.

The term 'dysmenorrhœa' has been long employed to denote the presence of pain or difficulty, one or both, attendant on the performance of the function of menstruation.

Hardly two patients suffer alike during menstruation; and we see a regular gradation between cases in which there is very slight suffering, and others in which the agony is such as to be almost unendurable. The pain also varies in its position, but it is for the most part referable to the uterus; and, in the cases where there is most pain, the pain is generally identical in position with that of this organ. Pains of various degrees of intensity may be felt at other parts of the body; but they are added, so to speak, to the other—the essential pain, which is situated in or about the pelvic region.

What is the relation of the pain to the flow of the menstrual

fluid? This, being the vital point of the whole question, demands our earnest attention.

We find in practice several variations in respect to the manner in which these two things, the pain and the flow of the fluid, are related one to the other. In some cases it will be found that the menstrual fluid escapes from the uterus from the first; the patient having little, but only a little, to complain of during the whole menstrual period, while in other cases, on the contrary, the appearance of the menstrual fluid is delayed for a certain time, and in the meanwhile the patient suffers more or less severely from pain; the discharge appears, and the pain thereupon quite or almost completely ceases. In other instances the pain is present intermittingly more or less during the whole of the period.

PATHOLOGY.

The pathology which has up to a very recent period been universally accepted in regard to dysmenorrhœa must now be regarded as unworthy of a formal refutation. In the former editions of this work the subject has been amply considered; the classification of dysmenorrhœa into 'congestive,' 'neuralgic,' 'obstructive,' &c., can no longer be received as scientific or practical. I hold it as unquestionable that dysmenorrhœa is to be regarded as a symptom indicating, in almost every instance, an impediment to the escape of the menstrual fluid from the uterus. Before the existence of flexions of the uterus was recognised, the sole 'obstructive' cases of dysmenorrhœa admitted were those in which the external os uteri was found small and narrow. But the 'obstructive' cases, it can now be shown, are much more numerous, and they include very many instances where the *internal* os uteri is the seat of obstruction to the escape of the menstrual fluid. In the statistics of my hospital experience, given at p. 5, it will be seen that the cases put down under the head of 'Dysmenorrhœa' alone are exceedingly few, for the reason that when the condition of the patient was investigated, the uterus was invariably, almost without exception, found to present a condition causing an obstruction to the passage of the menstrual fluid. The cases of 'dysmenorrhœa' are to be sought, therefore, under various other heads—Flexions, Fibroid Tumours, &c.

Pain during the menstrual period is not exclusively due to obstruction to escape of menstrual fluid; for, as will be mentioned presently, there are cases in which the source of the discomfort

present is to be sought elsewhere. But the 'obstructive' theory applies widely and generally to such cases, those not coming within it constituting the exceptions.

There has been considerable dispute as to the *seat of the obstruction* in cases of dysmenorrhœa. On the one hand, the *external* os uteri is still held by some authorities to be the almost exclusive seat in cases where obstruction exists; on the other hand, the *internal* os uteri is held by other and numerous authorities to be the point where the obstruction occurs.*

Opinions so widely differing and held by equally eminent authorities may seem difficult to reconcile. The point is certainly of the greatest practical importance. It appears that the circumstance that in many cases of dysmenorrhœa, the internal os allows a tolerable-sized sound to pass through it, is held by some eminent practitioners to prove that there is no stricture at this point. Such is the position taken by Dr. Bennet, Dr. Tilt, and others. But it is contended, on the other hand, that the stricture may nevertheless virtually exist at the internal os, in consequence of flexion of the canal, the flexion acting as an obstacle to menstruation, but not preventing, necessarily at least, the passage of the sound. Here lies one source, at least, of the apparent discrepancy. Dr. Savage well describes the condition, and with his remarks on this part of the subject† my own views and experience completely coincide. The least bending of the uterus at the internal os will thus cause obstruction. I certainly agree with Dr. Marion Sims, Dr. Savage, Dr. Greenhalgh, and others, in regarding the internal os as by far the most common seat of obstruction. The cause of such obstruction at the internal os is according to my experience almost invariably a flexion of the uterus. Other causes may give rise to obstruction, but the percentage of such cases is small. The curve described by the uterus in cases of flexion is, it must be remembered, not always the same. The flexion may be seated *below* the internal os, at the middle of the cervix, in fact: here the obstruction is not seated, of course, precisely at the internal os, but at a point below that. These latter cases are for the most part those described as 'conical' cervix, and they are not unfrequently associated with dysmenorrhœa.

* Many of the various arguments and statements put forward by those who have in public discussed this subject will be found in vols. vii. and viii. of the *Obstetrical Transactions*, in the reports of the discussions on the subject at the meetings of the Obstetrical Society of London.

† Report of Discussion, *Obstet. Trans.* vol. vii. p. 141.

But I do not think they occur so frequently as Dr. Barnes believes.*

The essential part of menstruation, so far as the uterus is concerned, appears to be growth, thickening, and increase of vascularity in the mucous membrane lining the body of the uterus; the tissue of the uterus itself being also congested, and the venous plexuses situated around this organ being at this time filled and gorged with blood. The menstrual blood is poured out by the mucous membrane of the body of the uterus. At the point where the cavity of the body of the uterus and the cervical canal join, the canal is narrow; so narrow, indeed, that in women who have not borne children it usually admits easily only an instrument having a diameter of an eighth to a quarter of an inch. Hence it follows that, in a by no means insignificant proportion of cases, the internal os uteri, as it is termed, is so narrow that very little is needed to close it altogether, or at all events to so close it that the escape of fluid from the uterine cavity is rendered difficult.

Further, in regard to the sufficiency of the canal to allow of the passage of fluid, it must not be forgotten that the *quantity* of the fluid varies in different cases; a canal which may be a very sufficient outlet in one individual or under one set of circumstances may be inadequate in another individual and under different circumstances. There are other things to be considered also, in respect to each of which considerable variations are observed: the state of vascularity of the uterus itself; the state of vascularity or fulness of the surrounding organs.

The uterus is liable to certain morbid alterations in position and texture which may still more materially affect the patency of the canal of exit. (See chapter on Flexions.) Thus it may be bent on itself like a retort, by which the canal is necessarily somewhat constricted, or the axis of the canal so altered as to affect sensibly its patency. Within the tissue of the uterus, frequently grow fibrous tumours, which may, and do occasionally, encroach on the canal, and thus constrict it. The same result may be produced by polypi growing within the uterine cavity itself; and occasionally we find the whole cervix uteri congenitally narrow, from an apparently defective development of this part of the generative organs. A very important class of cases are those in which the lower segment of the uterus—the cervix—has become hypertrophied, indurated, and otherwise diseased:

* *Obstetrical Trans.* vol. vii. p. 120.

here the canal may be contorted and twisted in such a way that the extra amount of congestion which occurs at menstruation so swells out the cervical tissues as to seriously affect the patency of the canal.

These considerations are sufficient to show that we have not far to go in order to find a number of conditions capable of producing constriction of that canal by which the menstrual fluid is evacuated from the uterus. Conditions of the kind alluded to are known to be associated with severe dysmenorrhœa; and the pain in such cases is completely accounted for by the retention, temporary or partial, which we may suppose to be present under these circumstances.

Other arguments for the truth of the explanations now offered may be drawn from the facts, that, in the first place, dysmenorrhœa of the kind now under consideration is generally associated with sterility (see Statistics on this subject at p. 233); that, in the second place, it is not observed in women who have had children, unless in connection with some recognisable and very obvious alteration in the cervix uteri of such a nature as to interfere with the patency of the canal which is sometimes the result of the parturient process; and, in the third place, from the results obtained by mechanical treatment for improving in various ways the patency of the utero-cervical canal.

A careful study of the symptoms and phenomena observed in cases where actual obliteration of the os uteri, permanent or temporary, has been known to be present, the menstrual product having been retained within the uterus and unable to escape, throws a considerable degree of light on the question now under discussion. In the work of Bernutz and Goupil * we find collected a very large number of accurately observed cases in which the kind of menstrual retention now alluded to was unquestionably and demonstrably present; and means are thereby afforded for studying the subject analogically, so to speak. The difference between the two classes of cases—those in which there is complete menstrual retention, as in the instances just referred to—and those in which there is what may be termed incomplete or partial menstrual retention—is only one of degree.

The cases which have passed under my own observation have offered the strongest possible confirmation of the truth of the position now maintained, that in ordinary cases of dysmenorrhœa,

* *Clin. Méd. sur les Mal. des Femmes*, tom. i. Paris, 1860. See also the English edition of this work by Dr. Meadows, issued by the New Sydenham Society.

in which there are, first pain, and, after a variable time, appearance of a discharge, what we have before us is really *partial but temporary menstrual retention.*

Naturally, the cavity of the uterus is very small, and incapable, unless dilated, of containing more than a very small quantity of fluid. It is the result of experience, that different individuals bear dilatation of the uterine cavity very variously; and hence it follows that retention of menstrual fluid within the uterus may produce different degrees of pain and very various degrees of suffering in different individuals.

The *severity* and *intensity* of the pain in cases of dysmenorrhœa is open, as already stated, to much variation. It is sometimes so severe, that the patient rolls on the ground in agony, it is not seldom so severe that for a day or two the patient is obliged to seclude herself from society, and is confined to her bedroom. In some rare cases the reason is disturbed by the excruciating and intense pain which is felt.

Nausea and vomiting are symptoms which very frequently accompany the pain of dysmenorrhœa. This is a point which has as yet not attracted the attention it merits. Under the head of Nausea and Vomiting, I propose to develope this subject more at length. Here it may suffice to say, that nausea and vomiting are by no means uncommonly observed, and sometimes with excessive severity in cases of dysmenorrhœa, due to chronic flexions of the uterus. (See Chapter XVII.)

The *causes* of dysmenorrhœa, using the term in the 'obstructive' sense of the word, may now be enumerated. They are:

Flexion of the uterus (most usually at the situation of the internal os uteri) occasioning a virtual stricture of the canal at its narrowest part. Ante- and retro-flexion equally are capable of giving rise to mechanical difficulty.

Congenital narrowness of the cervical canal, in association with *presence of an infantile uterus.*

Congenital narrowness of the os internum—the junction of the cervical canal with the cavity of the body of the uterus.

Congenital narrowness of the os externum uteri; not so commonly a cause of dysmenorrhœa as of sterility. Undue congestion and hypertrophy of the lining membrane of the cervix uteri, the canal being of the ordinary dimensions.

Increased flow of blood from the interior of the uterus, the canal of exit being insufficient for the ready escape of the blood.

Fibroid tumours growing in the thickness of the uterine wall

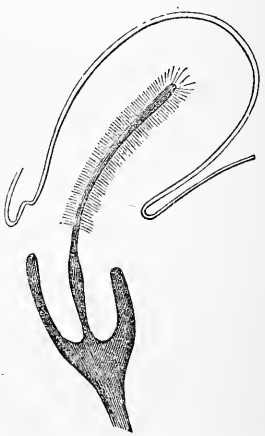
and so placed as to compress or distort the cervical canal. These tumours most commonly produce dysmenorrhœa when situated in the anterior wall, and generally occasion also some degree of flexion of the uterus, whereby the difficulty is aggravated. The most severe forms of dysmenorrhœa are witnessed among this class of cases.

Chronic congestion of the uterus itself, associated with slight degrees of flexion, or with other of the conditions above enumerated.

Small intra-uterine polypi hanging down within the cervical canal and acting as a plug, thus preventing the ready escape of the menstrual fluid.

An elongated condition of the vaginal part of the cervix, often associated with flexion of the canal at about its middle, or opposite the point of reflection of the vagina on the cervix. (See fig. 77.)

Fig. 77.



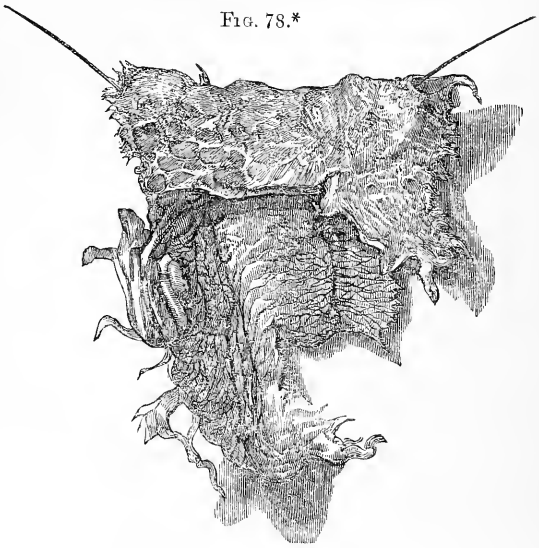
Contortion of the cervical canal dependent on an irregularly hypertrophied condition of the cervix. This is a condition not very uncommon, as the result of chronic inflammatory action in the part in question.

Membranous dysmenorrhœa.— Under this term are included a class of cases possessing peculiar interest, in which, at each menstrual period, or very frequently so at all events, a membrane is discharged. Scanzoni believes that exfoliation of the mucous membrane occurs more frequently than is ordinarily supposed. He found portions of the mucous membrane in 14 out of 21 cases of dysmenorrhœa, when careful search was made for them. This is what we should indeed expect, if the partial exfoliation or destruction of this membrane occurs at each period under ordinary circumstances. It is, however, rare to meet with cases of exfoliation of the membrane in an entire piece, or to meet with pieces of any considerable thickness, and to cases of the latter class only does the term membranous dysmenorrhœa apply. There is no doubt whatever that the membrane discharged in these cases is really the uterine mucous membrane, but whether it is an accidental thickening due to excessive growth, or to pregnancy, is open to doubt. The annexed drawing exhibits the appearance of the membrane. (See fig. 78.)

The expulsion of the membrane is attended usually with pain, just as happens in cases of abortion, and this pain is of precisely the same character as in cases of abortion, and indeed as in the cases of menstrual retention just described.

To illustrate this subject, I would mention the particulars of two cases. The first was that of a lady, æt. 30, who had been married three years, never pregnant; menstruation profuse before marriage. Since marriage, with very few exceptions, a thick membrane had been discharged at each menstrual period. It is probable, or at least quite possible, that this was the case before marriage, and that it was not seen previous to that time, because not looked for. The membrane is discharged usually not later than twenty-four hours from the time of the commencement of

Fig. 78.*



the discharge. At this time there is a stoppage of the discharge for an hour or two, the bag of the membrane then comes away, its expulsion being attended with severe pain, and the discharge then continues uninterruptedly for three or more days.

The second was that of a lady æt. 34, who had been married for thirteen years, but never pregnant. For the last eight years

* This drawing, made for me by Mr. Tuson, represents the uterine lining expelled nine weeks after a catamenial period. There was no trace of an ovum nor evidence of attachment of one. The flocculent shaggy external aspect and the smooth velvety internal surface are well shown. The patient had had one child, and thought she was pregnant.

certainly, probably for a longer time, a membranous bag, complete or in shreds, has been expelled at almost every menstrual period. The body in question makes its appearance always within the first few hours after the discharge has begun to flow.

In both of these cases the interval between the catamenial periods was long—five weeks. In the first case there was present a copious secretion of mucus from the uterine cervical cavity, in both there was pain in the left ovarian region, but in both cases this ovarian pain was not of old date. The most interesting fact appears to be the time of the menstrual period at which the membrane was expelled. This is interesting in regard to any explanation of its cause and nature. There appears to be no possibility of concluding otherwise than that the membrane actually expelled belonged to, or was the product of, the former menstrual period. If, normally, the menstrual decidua is thrown off from the uterus after the discharge has ceased, or at all events during the latter period of the discharge, it would appear that in these abnormal cases this exfoliation is postponed, the membrane continuing to grow during the inter-menstrual period.

The sterility usually present under these circumstances may result either from the uterine mucous membrane being so altered pathologically as to interfere with the due and proper reception of the impregnated ovum when it arrives in the uterine cavity from the Fallopian tube, or from some condition of the uterus (*e.g.* flexion) cutting short the life of the ovum at a very early period.

With respect to the pathology of these cases of membranous dysmenorrhœa, the facts which have come under my own notice do not enable me to offer a definite opinion. It so happens that since my attention has been directed to the great frequency of flexions, I have not had a single case of this affection come under my notice. The two cases above related were observed some years since.

The question naturally occurs, are these cases of membranous menstruation peculiar to married women? It would appear that perfect casts of the lining of the uterus are not observed except in married women, though minute shreds are observed occasionally in single women. Hausmann* adopts the view that these perfect casts are really early abortions, and, I must confess, there is much to be said in favour of this view.

Pain during Menstruation due to other causes than obstruction.—In many cases where the menstrual period is one of suffer-

* *Mon. f. Geb.*, Jan. 1868.

ing, more or less habitually, to the patient, this suffering is dependent on causes different from those just alluded to, and in which there is evidence of retention of menstrual fluid. Thus, in some cases, the painful sensations present appear to be seated in, or to radiate from, the *ovary* itself, this organ being in a condition which is one of congestion, of irritation, or, as described by many authors, of inflammation. In other cases, the *uterus* seems to be the seat of the painful sensations; a continuous aching pain is experienced, analogous in kind to neuralgia seated in any other part of the body—the face, for instance. This kind of pain seated in the uterus is very different from the spasmodic, contractive, intermittent pain which, as before explained, is suggestive of *retention*. Further, the ovaries of the uterus may both be the seat of pain felt during menstruation.

Disordered ovulation.—The process of ovulation, consisting in the maturation and dehiscence of the ova, the swelling and rupture of the Graafian follicles, is liable to be disordered: the rupture may be impeded by presence of undue thickening of its external tissue, due to inflammation of the ovary generally (see 'Pathology of Diseases of the Ovary'), or of the particular follicle itself; or the distension of the follicle prior to rupture may be greater than usual; or the ovary may be unusually sensitive, and the physical phenomena being normal, the extreme sensibility of the patient renders the natural process unusually painful.

Dr. Farre's* remarks on this subject are specially interesting. After alluding to the difficulty experienced in ascertaining how far pain and tenderness about the ovaries are to be regarded as evidence of inflammation of the organ, he says: 'There can be no 'question that the cause of much of this suffering is to be looked 'for in the changes which the tissues of the ovary undergo in the 'act of expelling the ova.' The changes in question are closely allied to inflammation. 'It is probable,' says the author, 'that 'when the follicle or the entire ovary becomes tense from the 'effusions which have been shown to have taken place ordinarily 'within it, and this tension is not relieved because rupture does 'not occur at the proper time, so that *ovulation is disappointed*, '*or is aberrant*, the symptoms which might be expected to accom-'pany such an interrupted process would be those which are 'usually set down as indicating inflammation in a part.'

As a matter of experience I must confess that I have met with

* *Cyc. Anat. and Phys.* article 'Uterus,' p. 576.

very few cases in which pain during menstruation could be traced to the ovaries. As regards the locality of the pain being an indication of the ovary being its seat, the conclusion is fallacious, for in many cases of anteflexion of the uterus a pretty constant pain in the region of the ovaries is frequently observed, and that it disappears on altering the position of the uterus would appear to show that it is not, in such cases, located really in the ovary. It is not denied that ovaritis and pain due to ovaritis are observed; but the condition does not appear to be common.

General Abdominal Congestion, Derangements of Digestion, &c.—Women who are the subjects of chronic uterine disease of various kinds, and who habitually experience more or less pain in the pelvic organs, naturally suffer more at the menstrual periods. Those who have a congested, overloaded condition of the abdominal viscera, suffer more at the menstrual periods than others. A sedentary or a too luxurious mode of life rarely fails to give rise to the congestion in question. Derangement of the digestive organs to a marked extent is usually present under such circumstances.

The complication of dysmenorrhœa with nausea and vomiting have been attended to. Hysteria is another complication. (See Chapter XVII.) A *neuralgic* habit of body constitutes a predisposition. It is generally, and as I believe correctly, supposed that the existence of the *rheumatic diathesis* predisposes to menstrual suffering. The patient afflicted with this 'rheumatic' form of dysmenorrhœa is liable to migratory pains in different parts of the body, more especially in the joints; there is a loaded condition of the urine from excess of urea, lithic acid, and lithate of ammonia. Flatulence and hæmorrhoidal congestion are also usually present in such cases.

Thus, to sum up these remarks on the pathology of dysmenorrhœa :—

The pain may be due to retention of menstrual fluid, which may be either partial or complete. That is to say, there may be a slight discharge, but, the aperture of escape being insufficient, there is a partial retention; or, the patient being, for a variable time, without discharge of any kind, the case is one of complete retention.

The pain may be due to congestion of the uterus, to congestion of the ovaries, to inflammation of the Graafian follicles coincident with ovulation, or simply to neuralgia.

These two classes of cases glide insensibly one into the other, it

is true. Obstruction, when present, gives rise to congestion, to inflammation, to suffering of neuralgic character; and *vice versâ*, the congestion or inflammation of the uterus leads to obstruction in the manner already pointed out; but the cause of the sufferings of the patient appears in the majority of cases to be associated with partial or complete retention of menstrual fluid.

DIAGNOSIS OF PAINS REFERABLE TO THE INTERNAL GENERATIVE ORGANS INCLUDING DYSMENORRHŒA.

Pains referable to the internal generative organs may be divided into two classes, viz.: 1. Those associated with the performance of the function of menstruation—dysmenorrhœa; and 2. Painful sensations experienced irrespective of menstruation. It may not be possible in all cases to draw an absolutely distinct line between these two classes of cases; but the separation should be made as far as is possible.

A. *Pains Associated with Menstruation, true Dysmenorrhœa.*—The diagnostic distinction between cases of dysmenorrhœa in which there is partial menstrual retention, and those in which there is no such impediment to the escape of the menstrual fluid as to produce this state of things, are the following:—In partial retention the pains are situated in the uterine region, and radiate from this point to the back and loins; they may be, and generally are, very severe, more or less paroxysmal in character, resembling, though on a small scale, the pains of labour, and often go on increasing in intensity until relieved. Coming on suddenly, lasting for a certain time, and then going off, to return again after a few minutes or after a longer interval—such is the character of the pain. The patient may not be entirely free from pain throughout; but the occasional, it may be periodic, exacerbation—this it is which characterises it. When the pain is excessive, it may induce disturbances of the nervous system of various kinds—hysteric convulsions, agitation, anxiety, palpitations, tenesmus, pain in micturition, &c. Pain attending menstruation and also coming under the head of dysmenorrhœa may extend to the ovarian regions, deep down behind one or both groins, and it usually extends from this spot down the thighs. It may extend to the loins also. In menstrual retention there may be pains in the back, thighs, &c.; but it is not limited to these parts, and there is also pain in the uterine region.

As long as the menstrual discharge continues persistently, the

presence of pain need not generally give rise to uneasiness, although, as previously observed, it by no means universally follows that, because there is a discharge, the size of the outlet is sufficient. It is the absence of the discharge coincidently with presence of the kind of pain above alluded to, which should make us suspicious of the existence of some obstruction, and more especially when the symptoms in question have been present for any considerable time, or have shown themselves recently in an individual known to have previously menstruated easily and regularly.

When, from the nature of the symptoms present, we are led to believe that there exists a mechanical difficulty of some kind, it will be necessary to make a vaginal examination, and in certain cases to use the sound.

In those cases in which the dysmenorrhœa is connected with the discharge, from time to time, of a membrane from the interior of the uterus, the presence of the membrane itself will so far remove all obscurity from the diagnosis.

When there is painful menstruation, the discharge appearing scantily, disappearing for a time, then reappearing, perhaps in gushes, and again ceasing—when this condition of things is noticed at successive menstrual periods it gives good ground for the suspicion that there is some difficulty in the escape of the fluid. When coagula having the form of casts of the uterine cavity, or a portion of it, are passed under such circumstances, this is also in favour of the presence of mechanical obstruction.

It is important not to mistake abortion for dysmenorrhœa, and *vice versâ*. In the case of abortion, there has been suppression of the menses for one or more periods; but in dysmenorrhœa there have been usually preceding attacks of similar character, and no suppression of the menses has been (usually) observed. When there has been partial retention of the catamenial fluid, clots are often observed to be passed, accompanied with contraction of the uterus, and pains quite identical with those of labour; and in such cases very careful examination of the substances discharged may be necessary to enable us to distinguish their nature.

In one case which came under my observation, expulsive pains, such as those described above, were found to be due to the presence of a clot of blood in the vagina, the escape of which was rendered difficult by the circumstance of the orifice in the hymen being rather smaller than usual.

(B.) *Diagnosis of the various Pains referable to the generative organs, not associated with menstruation.*

The pains or painful sensations experienced by the patient, and which are referable to the generative organs, are exceedingly numerous. They vary in degree; they vary in position; there is not a constant relation between a particular cause and a particular effect. Nevertheless, the pains experienced by the patient are data which can be generally usefully turned to account in the diagnosis; in certain cases the data in question have a very great value.

It is well known that a feeling of pain at a particular spot is not always indicative of lesion or of appreciable change at the spot in question. The pain is frequently what is termed a 'reflected' pain; at other times it is produced by pressure on the trunk of the nerve supplying the painful part. In the diagnosis of the nature and cause of a particular pain, the first thing to be done is to determine whether the locality of the lesion be identical with that of the pain; and if this question be decided in the negative, it must be further ascertained whether the pain be a reflected one, or due to pressure on the nerve supplying the part.

It very frequently happens that pains of all three kinds exist simultaneously. Thus a fibrous tumour growing in the wall of the uterus may give rise to pain of the three varieties above mentioned, viz. pain in the uterine region itself, pain in the back—the reflected pain—and pain in the lower extremities; the latter due to the pressure of the enlarged uterus on the sacral plexus within the pelvis. So also an ovarian tumour may give rise to pain in the pelvis, to pain around the hips or back, and to pain in the thigh, or leg, or foot.

In the estimate of the causes of reflected pains now under consideration, the disorders of the bladder should also not be forgotten.

There is a class of pains referable to the generative organs, and very frequently observed, which may be conveniently described as 'pressure' pains. The nerves which are most liable to suffer from pressure within the pelvis are those issuing from the anterior foramina of the sacral bone, which enter into the formation of the sacral plexus, and which supply also branches to the pelvic viscera. The nerves for a short distance lie close against the sacral bone, only separated from it by the fibres of the pyriformis muscle, and they may, during this part of their course, be compressed by a pelvic tumour against the hard surface of the bone in question

The nerves which are given off from the sacral plexus are, many of them, sensory nerves, and the effect of pressure on these nerves within the pelvis is therefore to produce pain in the skin supplied by the particular nerve so pressed upon. The following are the localities which may be affected in the manner above described: —the hip-joint, the labia pudendi, the clitoris, nymphæ, perineum, the back of the coccyx, the upper part of the inside of the thigh, the back of the thigh below the gluteus maximus, the leg, and the foot. The upper portion of the labia, and the portions of the skin or other parts of the lower extremity not included in this list, are supplied by branches of the lumbar nerves; these latter nerves are not liable to pressure from tumours situated in the pelvic cavity—that is to say, when such tumours are confined to that cavity alone.

The foregoing observations have certain obvious important applications in diagnosis, but it is not in the nature of things that any great regularity should be observed in the relation subsisting between location of lesion and location of pain thereby produced, many circumstances being likely to modify or affect the result in particular cases.

According to my experience there are four principal situations in which pain referable to the internal generative organs is experienced by women suffering from disorders of those organs.

They are:—1. The back. 2. The groin, or ovarian region. 3. The median hypogastric region. 4. The lower extremities.

The two first situations are most commonly the seat of the pain. I have carefully questioned patients in reference to these points for a considerable time past, with the view of ascertaining the existence of a definite relation between the lesion and the pain or suffering of which the patient complains, and the conclusions to which these questionings have led seem to be uniform and systematic in their expression. Necessarily the opinion formed by a patient of her condition is a vague one, but patients have generally a vivid appreciation of the suffering they experience, and they mostly proceed, if allowed to do so, to give a precise statement as to the position of the pain they feel, or as to the nature of the discomfort which leads them to seek advice.

Pain in the back is a well-known sign of uterine disease. But it is not so well known that pain in one or both of the groins is a sign of uterine disease. That such is the case, however, is very certain, and I am anxious to call prominent attention to it. Formerly a pain situated in this situation was referred to the

ovaries, probably in consequence of the ovary being near the spot. I was led to associate this pain with the uterus simply in consequence of the observation recurring over and over again, that patients so complaining were almost invariably found to be affected with anteflexion of the uterus. Latterly I have come to regard this pain as an almost certain sign of the presence of the affection in question, and it has very considerably modified my views as to the share the ovaries take in producing pains referred to the region in which they are situated.

I proceed to consider the varieties of pains in these different situations *seriatim*.

PAIN IN THE BACK

is one of the most common symptoms present in women labouring under uterine or allied disorders. The pain here alluded to more usually affects the lumbar and sacral regions and the parts adjacent; it is not usually an acute pain, but an ill-circumscribed, aching sensation, very wearying, and often extremely distressing to the patient. The intensity of this pain is not by any means proportionate to the severity of the disease present. Women suffering from uterine disorder, combined with constitutional derangement, are liable to this pain in its most troublesome form, of which we have a very marked instance in cancer of the uterus, giving rise to long-continued menorrhagia and consequent anæmia.

One of the most common causes of pain in the back is flexion of the uterus. Retroflexion is particularly associated with it, but anteflexion is very frequently the cause of it. Again, in quite exceptional cases, these flexions may be unattended with back pain. Pain in the back generally also attends expulsive action of the uterus from *whatever* cause that expulsive action may originate. The dilatation of the os uteri is generally attended with pain in this situation. Pain in the back is not necessarily indicative of disease of the generative organs, but the fact that a patient has for a considerable period suffered from pain of this description should induce the practitioner to consider whether the disease of the internal generative organs, up to that time possibly overlooked and unrecognised, be not present, and to take measures for satisfying himself on this point. The connection between the pain in question and the presence of uterine or other internal disorder is often substantiated by the fact that before, during, or immediately after the menstrual periods, it is most troublesome;

sometimes, indeed, it is only present at such times. The pain of ordinary lumbago is the most likely to be confounded with it. Attacks of lumbago are, however, more acute in character, and they occur irrespective of the menstrual periods. Diseases of the vertebræ, aneurism, diseases of the kidneys, &c., are some not uncommon causes of persistent aching or pain in the back.

PAINS IN THE GROINS.

As already hinted, the signification of the pain so frequently present in one or other of the groins, just above Poupart's ligament, is, in my opinion, different to that which has been usually accepted. The fact that the ovaries are near this spot, that the pain appears to be there located, has led to this misconception.

A pain felt in the situation indicated is most commonly due to *anteflexion of the uterus*. That this is a fact I am convinced by very numerous observations. Anteflexion does not invariably produce such a pain, but it does so in nine cases out of ten. The pain is a wearing, more or less constant pain, increased by motion, sometimes only produced by motion, generally confined to one side, but not always. For further remarks on this subject, see chapter on 'Flexions.'

In some few instances a settled, fixed, constant pain is present in the anterior part of the abdomen, rather higher up than the groin, and nearly on the level of the umbilicus. Such a pain I have met with, and traced its connection with *retroflexion* of the uterus. Three most remarkable instances of this have occurred to me in private practice, the pain ceasing instantly on removal of the cause. As a rule, retroflexion gives rise to pain in the back rather than the front part of the abdomen, but these exceptional cases do occur. Formerly such cases would have been termed 'hysterical.'

Ovarian Pain, referable to the ovaries, and situated deep down sometimes in the inguinal or iliac region, is observed. It may be due to interrupted or 'disappointed' (to use Dr. Farre's words) ovulation, which may be likened to the aching caused by distension of the testicles, or be due to chronic inflammatory action in the follicles themselves. In a few cases the pain is a kind of neuralgia of the part without inflammatory action. It may be due to *Sexual Irritation*. Undue sexual irritation in the male is accompanied by aching and pain in the testicles. This pain seems to be comparable with it.

Another cause of ovarian pain, to which attention has been directed by Bernutz, and in this country by Mr. de Meric,* is gonorrhœal infection. An inflammatory action appears to be set up in the ovary, or in the peritoneal membrane near the ovary, in some cases of gonorrhœa, analogous to the orchitis witnessed in the male.

A variety of this form of pain was described by Dr. Rigby as being indicative, together with other signs, of a displacement—a kind of prolapsus of the ovary. The pain alluded to is 'a peculiarly sickening pain about the sacral region, extending to one or other of the groins, and coming on in paroxysms of such agonising severity as to render the patient frantic with the intolerable suffering.† The pain is greatly aggravated by passage of the fæces; the part in the vagina corresponding to the ovary is tender to the touch. 'It bears a close resemblance to the intense and peculiar sufferings in a case of orchitis.' Further, says this author, 'the menstrual periods are always attended with greatly increased suffering.' I have not met with such cases.

PAINS IN THE HYPOGASTRIC REGION.

The pains due to uterine diseases are frequently situated in the central hypogastric region. For diagnostic purposes we may consider: *a* Intermittent pains; *b* Pains more or less constant; *c* Pain of inflammatory character; *d* With symptoms as of perforation; *e* Hysterical pain; *f* Bearing down pains.

(*a*) *Intermittent Pains.*

Of all the pains which women experience in this part of the body, the most characteristic and most interesting, from a diagnostic point of view, are those pains which may expressively be termed *labour-like pains*. The pains in question are peculiar in their nature; they come on in paroxysms, lasting a certain time, and leaving the patient pretty free during the intervals; and they are due to contractions of the uterus, generally excited by the presence of some body, substance, or fluid, within this organ. When, therefore, a woman is found to be suffering from pain in the hypogastric region, which possesses the characteristics pointed out, we generally set it down to the presence of uterine contractions. Under certain circumstances, it appears that pains very closely

* *Lancet*, June 14, 1862.

† *On Diseases of Women*, p. 278.

resembling these may be produced by the contractions of the vagina wall itself, as in cases of clots of blood or foreign bodies in this canal. In most of these cases, uterine contraction is associated with the vaginal contractions in such a way that the latter element in the phenomena is unrecognised.

The typical 'labour-pain' is that observed during parturition at full term, where the uterine contractions are most severe and most powerful. It is necessary, however, to regard attentively the phenomena then observed, in order to be in a position to detect and recognise the presence of pains of the same nature when they are less severe and intense in degree, and consequently more liable to be confounded with other kinds of pain.

The principal conditions under which labour-like pain may be observed will now be mentioned.

In *women who have never menstruated*, the presence of hypogastric pain of the kind in question would make us suspect closure of the hymen, of the vagina, or of the os uteri, and that the menstrual fluid, although secreted, could not be expelled. In such cases the pains at first felt are slight, but as month after month passes without relief, they become more severe, and are finally of the most intense character. The enlarged uterus is usually then to be felt above the pubes.

In *women who have menstruated*, the presence of hypogastric pain recurring at intervals, sharp while it lasts, and leaving the patient free from pain in the intervals of the paroxysms, may be due to *abortion*. If the patient had passed over one or more periods without menstruating as usual, and if the pains above described were accompanied by a discharge of blood from the vagina, this would render the suspicion of abortion so strong as to necessitate not only an examination *per vaginam*, but also a careful inspection of the matters discharged. Great caution should be exercised in expressing any conclusion on such a question, and a conclusion is only possible after a careful scrutiny of the facts elicited.

Respecting an abortion taking place at four, five, or six weeks, it would be exceedingly difficult for the practitioner to affirm positively that the case was one of abortion, unless he were fortunate enough to secure the ovum itself.

Menstrual Retention occurring subsequently to more or less regular performance of the Menstrual Function.—In these somewhat rare cases, labour-like pains may be present.

In cases of *Peri-uterine Hœmatocele*, labour-like pains are

usually observed. They either precede the occurrence of the hæmorrhage, or are produced by the presence of the hæmorrhagic effusion in the pelvis. When the hæmorrhage in question has occurred, the pressure of the tumour thereby produced gives rise to labour-like pains, to difficulty in micturition, defæcation, &c.

Presence of Blood-clots, Fibrous Polypi, retained portions of Placenta or Fœtal Membranes, Degenerated (e. g. *Hydatidiform*) *Ova*, within the uterus, may give rise to labour-like pains, consequent on the attempt of the uterus to expel the bodies in question. The uterus appears to be very capricious in regard to tolerance of the presence of bodies within it: large polypi are sometimes found in the uterus, which have given rise to comparatively little pain; while, in other cases, the patient may have been tormented almost daily by severe colic-like pains in the hypogastric region from a comparatively small growth of the same nature.

Tumours growing in the Substance of the Uterus.—Of these the fibroid tumour is a frequent source of pains of the kind now under consideration. In cancer of the uterus, labour-like pains are frequently present, especially at an advanced stage of the disease.

Collections of Puriform or other Fluid in the Uterine Cavity.—In women suffering from chronic *flexions* when the canal of the cervix is not so large as to allow a free passage of the fluid secreted, the uterus sometimes becomes distended with serous or puriform fluid, and labour-like pains supervene. This retention of fluid in the uterus in association with flexions is by no means uncommon. The discharges may in such cases be *offensive*. Such retention may occur when the uterus is *dislocated* from its normal position by presence of tumours in the ovaries, &c. These labour-like pains are then also noticed.

Intestinal Irritation, e. g. *Dysentery.*—Pains due to this cause, and simulating the labour-like pains above described, may give rise, at all events at first, to obscurity in the diagnosis, Thus, I was called to a lady recovering from the effects of her lying-in, who had been suddenly seized with paroxysms of pain in the uterine region, faintness, and depression—the pains so closely simulating the labour-like pains just spoken of, that it was considered likely that the uterus was endeavouring to expel a retained coagulum. A few hours later, however, some well-marked dysenteric stools were passed, and it became evident that the pains in question were seated in the intestine. The pains produced by lead-poison-

ing, and known as *colic*, could hardly be confounded with those of uterine origin.

Neuralgia of the Uterus.—In a lady whom I have attended for some years, the subject of occasional severe neuralgia, the neuralgia is frequently accompanied by what she herself terms 'labour-pains.' The pains in question are temporary, and subside when the neuralgia has located itself elsewhere. Cases where such pains are more persistent are described by various authors as *rheumatism of the uterus.*

Retention of Urine.—That this condition may give rise to labour-like pains the following case, the particulars of which were kindly furnished me by Dr. Leonard W. Sedgwick, will show:—He was called to a young woman who was supposed to be in labour. In the abdomen was felt a tumour the size of a nine months' uterus; the patient was apparently in strong labour; violent bearing down pains, with only a short interval, were observed. The woman denied pregnancy, the tumour was found to be elastic, and no fœtal limbs or body could be felt. Dr. Sedgwick tried the catheter and removed an incredible quantity of urine from the bladder. The straining efforts of the patient to evacuate the bladder gave rise in this case to 'labour-like pains in very great perfection.'

b. Pains more or less constant.

These may occur in all degrees of intensity, and the causes of the same are so numerous as almost to defy classification.

Pains in the hypogastric region may be due to some abnormal condition of the uterus, or of the bladder, or of some other of the pelvic viscera. The pain due to abdominal disease is usually situated higher up, about the umbilicus. And although these limits are not always observed—although pelvic disease may occasion pain even higher than the umbilicus—and, *vice versâ*, although abdominal disease may occasion pain in the hypogastric region, yet the rule just stated generally holds good.

Some of the more salient points as to the diagnosis of the causes of the pain experienced may now be mentioned. The cases in which the pain is of a more or less chronic character, and unattended with symptoms indicative of inflammatory conditions, are those now to be considered.

In *Cancer of the Uterus*, severe hypogastric pain, which is generally remittent in character, accompanies almost constantly the

more advanced stage of the disease; whereas at an earlier period in the history of the affection, the pain is not so severe, and is more generally situated in the back. The 'lancinating' pain which has been considered by some authorities as an early sign of cancer is correctly described by Dr. Rigby as 'a sudden sharp burning dart of neuralgic severity, always proceeding from one spot, and sometimes transfixing the whole pelvis.' It would be wrong, however, to rely on this sign alone as diagnostic of cancer, for pains having this character are occasionally present in non-malignant affections, and, indeed, in cases where there is no tangible disease at all. But when hæmorrhage, offensive discharges, and pain of the kind now described are all present together, a careful physical examination of the uterus is necessary; for there is a presumption that the case is one of cancer. In cases of corroding ulcer of the os uteri, these symptoms are also present; emaciation and fever are also common to both. The pain in cancer is usually more acute than in that of corroding ulcer. An observation which applies to both is, that hæmorrhage and pain are sometimes entirely absent. In cauliflower excrescence of the os uteri, really a form of cancer, there is generally a complete absence of severe pain for some time after the disease has commenced. The pain due to cancer frequently arises from local attacks of peritonitis.

In *Fibrous Tumour of the Uterus*, severe hypogastric pain may be present. The foul discharge is not present as in cancer, although this is a rule open to rare exceptions, but there may be profuse occasional loss of blood. The pain due to fibrous tumour may be quite as severe as in that in cases of cancer.

Flexions of the uterus frequently occasion a pain in the hypogastric region.

Neuralgia of the Uterus.—It is most rare for the uterus to be the seat of pain unless afflicted with flexion or some organic disease. The cases which were formerly designated cases of 'irritable uterus' are otherwise explainable. (See Chapter XVII.)

Disease of the Bladder.—Pain more or less persistent, and of a dull aching character, is observed where the bladder is inflamed—*cystitis*—the symptoms varying according to the intensity of the inflammation present. The function of micturition is always disordered in such cases, there being generally great irritability of the bladder, and consequent frequent and painful micturition. The cystitis may be idiopathic, it may be secondary to diseases of the uterus, or it may be due to *malignant disease* situated either in

the uterus or in the walls of the bladder itself. In some cases the sufferings experienced by the patient, and due to the presence of cystitis, are very severe. As a rule, the disturbances in the function of micturition, associated with this disease, render the diagnosis of the affection easy, but the presence of the disturbances in question does not necessarily point to the conclusion that the bladder is actually inflamed. The condition of the urine itself should be carefully enquired into, there being usually a large quantity of ropy mucus present in cases of cystitis.

c. Pain of Inflammatory Character.

Under this head are included all cases in which the ordinary signs of inflammation are present—pain, more or less acute in character; heat and throbbing; tenderness to the touch; feverishness; quickness of pulse, &c. These symptoms are often preceded by the occurrence of a rigor. They indicate inflammation of the uterus, of its peritoneal covering, or of some of the adjacent viscera or their coverings; and they are most commonly the consequence of labour, of abortion, of sudden disturbance of the menstrual function, or of operations about the genital organs. A frequent result in such cases is formation of *pelvic abscess*. The presence of pain in the pelvic region, with general *malaise*, in a woman recently subjected to any of the foregoing influences, should excite particular attention. (See 'Examination of the Vagina.') Hæmorrhage into the peritoneal cavity, from whatever cause, may give rise to severe peritonitis. The blood coagulates, effusion of lymph takes place, false membranes are formed over it, and pain of inflammatory character is under such circumstances observed. An important class of cases are those in which inflammatory action is set up in the interior or on the surface of ovarian cysts. In a woman the subject of ovarian dropsy, sudden access of pain of this kind would excite suspicion that inflammation of the cyst was present. Acute inflammation of the bladder is a condition giving rise to presence of hypogastric pain of the kind now under consideration.

An error liable to be committed is that of taking for inflammation what is only an emotional disturbing condition. The pulse is the best criterion. In cases otherwise closely simulating actual peritonitis, or inflammation of the uterus, or of the adjacent organs, the frequency of the pulse present in the latter affections is wanting.

An important class of cases are those in which

d. Pain of an Acute and Intense Character is suddenly felt in the Hypogastric Region,

accompanied by great prostration, and depression and shock to the system generally. Fainting, continuing for a considerable time and frequently recurring, great pallidity of surface, cold clammy perspiration, weakness or almost complete absence of pulsation at the wrist, a feeling of sickness or violent and uncontrollable vomiting, are symptoms often witnessed in this class of cases. To these is usually added considerable swelling of the abdomen.

The symptoms in question are such as to excite suspicion of perforation or rupture of some of the abdominal or pelvic viscera, with consequent escape of blood or contents of the ruptured viscera into the peritoneal cavity, or rupture of an abscess and effusion of pus into the peritoneum, from bursting of an ovarian cyst, &c.

It is very necessary to distinguish these really alarming cases from a class of cases already alluded to, and which in certain respects may simulate them—those of hysterical origin. The severity of the pain is, by itself, of not much value from a diagnostic point of view. In hysterical cases, there is an absence of symptoms of depression and prostration; and there is, moreover, generally evidence of previous hysterical attacks, or, accompanying the severe hypogastric pain, there are other unmistakable signs pointing to hysteria—the feeling of fulness and rising in the throat known as 'globus,' slight convulsions, &c. On the other hand, in the really serious cases, the patient has been previously in a state of good health, or at all events free from attacks of hysterical character, and the positive signs of great perturbation of the system only require to be looked for to be detected.

Further, examination of the abdomen gives valuable information. In hysteria, there is, together with the pain, great sensibility of the surface, the slightest touch giving rise to complaint, whereas deep slowly increased pressure is not painful: the reverse is true of the class of cases now under discussion. It is only at the onset of the attack that there is any possibility of confounding the perforation symptoms with those produced by hysteria.

The conditions which may give rise to the alarming symptoms above described will now be enumerated.

The pain may be produced by an affection of the abdominal or of the pelvic viscera, and there are no signs by which it can be

absolutely determined at the moment whether the seat of the accident be in the abdomen or in the pelvis proper. The concomitant circumstances generally enable us to decide this point, or the course of the case determines the diagnosis in this particular.

In *Perforation of the Intestine*, as from typhoid fever, from tuberculous ulceration, or connected with organic disease of the abdominal viscera, &c., the previous history would generally suggest the proper interpretation of the symptoms; and the pain is more usually, perhaps, referred to the umbilicus, or a point above it, than to the hypogastric region.

Certain conditions of the pelvic viscera, especially, are capable of giving rise to the symptoms in question. The following are the most important of these :—

Pelvic Hæmorrhage from the Ovaries, Fallopian Tubes, &c.; including Cases of Peri-uterine Hæmatocele.—The accident mostly occurs during or immediately after the occurrence of a menstrual period. It may happen in women previously healthy, but is more generally observed in women who are anæmic, and in whom there have been menstrual irregularities (see Chapter XXI.). Walking a long distance, straining, the act of intercourse, or sudden muscular effort, may precede the attack; it may occur also without such apparent exciting cause. The symptoms observed in such cases vary in degree of intensity; there are reasons for believing that, in a slight form, the accident is rather common, and, the symptoms being less severe, its true nature escapes recognition. When symptoms of the above kind occur in an intense degree, and in a woman who has been subjected to the foregoing influences, it may be suspected that they are due to a sudden outpouring of blood. The diagnosis is established by recognising the presence of a semi-solid tumour above the pubes, or pressing on the vaginal walls—the effused blood—such tumour having been before wanting.

Hæmorrhage in Extra-uterine Pregnancy.—There is an important class of cases, in which an outpouring of blood takes place in connection with pregnancy, and more particularly with pregnancy of an abnormal kind—extra-uterine pregnancy. The hæmorrhage due to extra-uterine pregnancy may give rise to the formation of a tumour in the pelvis, of the same kind as that witnessed in pelvic hæmorrhages of other kinds.

Cases in which the ovum is situated in one of the Fallopian tubes frequently occasion symptoms having the character of those described, and in a very intense degree; the suddenly occurring violent pain and the extreme degree of syncope being the most

significant. Here the patient is usually known or suspected to be pregnant. There may have been nothing about the case to excite particular attention; but more generally the woman has experienced unusual pains, or more discomfort than in ordinary pregnancy. Slight occasional losses of blood are frequently observed in these cases of extra-uterine pregnancy, which are, under such circumstances, often mistaken for return of menstruation. The rupture occurs in the third or fourth month, or earlier in the majority of cases, when the ovum is in the Fallopian tube; it is rare that it is postponed much later than this. On the other hand, the time of rupture may be considerably later than this, if the ovum be attached just without the tube, or in the abdominal cavity itself; and there may be no rupture at all, the pregnancy going to full term, with further results, which need not be particularly alluded to in this place. Rupture of the fœtal-containing cyst generally occurs when the fœtus is developed in the Fallopian tube; but in cases of extra-uterine pregnancy of the 'abdominal' kind, rupture is, on the contrary, rare. The hæmorrhage which takes place in cases of extra-uterine pregnancy is generally so great as to kill the patient, and death often takes place very quickly. In some cases, the patient lives longer, and dies apparently from the effect of a succession of hæmorrhages.

Rupture of the Gravid Uterus itself.—There are a few cases on record, in which this accident has happened, and without any very obvious cause. The third, fourth, and fifth months, are the various periods during which this has been observed. The symptoms noticed at the time of the rupture would not essentially differ from those present in rupture of an extra-uterine pregnancy, but the previous history in the cases might be somewhat different.

Rupture of Ovarian Cysts, with escape of their contents into the peritoneal cavity, does not, as a rule, give rise to marked disturbance; in some cases, however, when, concurrently with the rupture, there is hæmorrhage, severe symptoms may be produced, more or less identical with those described; and even without hæmorrhage occurring, the escape of the contents of such cysts may give rise to severe symptoms and death. Thus, in a case recorded by Dr. Gillespie, an ovarian dermoid cyst, containing hair and pus, burst; the pus was effused into the peritoneum, and the case speedily proved fatal. In this instance, the symptoms were, for a few previous days, diarrhœa, occasional vomiting, abdominal pain. These, especially the vomiting, became suddenly aggravated, and

death took place in a few hours from collapse. The symptoms closely resembled those due to irritant poisoning.*

e. Hysterical Pain.

It is well known that, in hysterical patients, the pains complained of are occasionally very difficult to distinguish from others of more serious character. The abdomen is very frequently the region in which pain is seated in cases of hysteria. From other pains seated in the hypogastric region, hysterical pains are discriminated by careful enquiry into the history of the patient, when previous occurrence of hysterical symptoms is substantiated, and by the absence of signs of inflammation or mischief of other kinds. The character of the pain offers in itself no conclusive indication, for hysterical pain may resemble in degree and intensity almost all other varieties of pain.

Further remarks on the subject will be found in Chapter XVII.

f. Bearing-down Pains.

In women suffering from chronic disease of the uterus, complaint is often made of what are called *bearing-down pains*. They more frequently occur in women who have lost flesh and who are in a bad state of health, and in whom the uterus is diseased. Diseases of the uterus involving change of shape or position of the organ cause them more particularly, anteflexion of the uterus very commonly so. In some cases where bearing-down pains are present there is partial or complete prolapsus of the uterus or of its cervix. The bearing-down sensation is also present in cases where tumours of the uterus, pregnancy, polypi or fibroid tumours, cancer, &c., exist. It may be due to prolapsus of the bladder. The presence of pains of this character generally points out the necessity for exploration of the uterus from the vagina.

PAIN SEATED IN THE LOWER EXTREMITIES.

It has been already explained how and why it is that tumours or enlargements of various kinds of the organs within the pelvis may give rise to pains situated in certain parts of the lower extremities. These pains have a mechanical origin, and there is

* *Ed. Med. Journal*, May 1862.

consequently no sign by which we can distinguish, by means of the pain alone, the nature of the substance that is exercising the pressure which is the cause of the pain. The 'pressure' pains are very important, however, in directing attention to the presence of tumours in the pelvis which might be otherwise overlooked. I have several times noticed pain of this kind in *early pregnancy*, and the occurrence of the pain attracted attention to the possibility of the presence of a tumour in the pelvis. In cases of retroflexion of the uterus, pain of this kind is a very common occurrence.

The pain frequently felt at the upper and inner part of the thighs and in the perineal region, in cases of *ovarian tumour*, is an instance of the same kind. Painful cramps are occasionally experienced in the calves of the legs, in cases where pelvic tumours are present. Cramps of this kind are frequently observed in labour, and these appear to be due to pressure of the hard parts of the fœtus on the sacral nerves. Pains situated in the anterior and other parts of the thighs, which regions are supplied with nerves from a different source, do not indicate presence of a pelvic tumour. To this rule, however, there is an exception occasionally witnessed in cases of *pelvic abscess*, where the tumour rises up above the brim of the pelvis, and gives rise to pressure on certain branches of the lumbar plexus of nerves as they pass with the psoas and iliacus muscles from the abdomen to the thigh. Pain at the outer part of the thigh is not rarely a marked symptom in cases of pelvic abscess. Another symptom frequently noticed under these circumstances is painful contraction of the thigh, with inability to extend the limb.

In the majority of cases, the pains felt in the lower extremities belong to the 'pressure' class.

Lastly, it must be remembered that there are many conditions capable of giving rise to pains in the lower extremities, quite unconnected with diseases or derangements of the generative organs. The following case may be mentioned as showing how irritation or injury within the pelvis may occasion pains elsewhere:—A lady had been operated on for stricture of the cervix uteri upwards of a year previous to my seeing her. She was now suffering from severe pain in the groin and pain in walking. The whole of the upper and inner part of the left thigh, the external part of the thigh, the gluteal region, the crista ilii and the left side of the sacrum were found very tender and acutely sensitive. Pelvic abscess was feared. After three months' rest the extreme sensitiveness still remained and localised in the same spots, but there was no evidence of formation

of pus. This case was one of reflected pain, the primary cause being probably injury of a nerve in the operation.

TREATMENT OF DYSMENORRHŒA.

Palliative Measures.—Whatever be the cause of the pain, certain general rules are applicable as regards the palliative measures which may be adopted and which may by themselves succeed in giving some degree of relief.

The first element in the treatment is *rest* during and for a short time before the period of the flow. The horizontal position is essential. The action of the digestive organs must be rendered easy, the food plain and simple, and regular action of the bowels ensured by simple aperients. When the pain is very severe, opiates are necessary; and these are most efficacious in the form of enemata. We are generally able, however, to do without opium; ether, of which the best and most efficacious preparation is unquestionably the compound spirit of sulphuric ether of the Pharmacopœia, combined or not with camphor, henbane, or sal-volatile—one or more of these are medicines very satisfactory in their effects, when given for the purpose of alleviating temporarily the pain present in menstrual retention, or for more simple cases. Cannabis indica is a valuable medicine in certain cases. A common domestic remedy—one the frequent use of which it is not, however, for obvious reasons, desirable to encourage—is gin-and-water. Chloroform inhaled, or given internally in the form of chloric ether, is often employed with advantage. Camphor and opium together are frequently serviceable.

Guaiacum was formerly a remedy much employed, and was highly spoken of by Dr. Dewees. Meigs thought very highly of black hellebore. Colchicum also was given, on the supposition that gout or a rheumatic habit of body was at the root of the evil. These remedies, however, are unsatisfactory. The warm hip-bath, in which the patient is to remain for half an hour or so, is perhaps the most effectual of all remedies in affording relief from the extreme pain sometimes present, while it is occasionally not less effectual in directly causing the discharge to appear. It is, in fact, both palliative and remedial in its effects.

In cases in which the pain during menstruation is referable to the *ovaries*, where, in fact, there is suspicion of the existence of ovarian folliculitis, in addition to the employment of the general remedies already directed, rest, evacuants, sedatives, &c., it is necessary to apply counter-irritation over the inguinal region; a

small blister, or embrocation of tartar emetic, may be used for this purpose. Sedatives, opium, chloroform, antispasmodics, and remedies of analogous character are frequently called for.

Curative Treatment.—If the nature of the pain be such as to indicate that menstruation is difficult, something more than general treatment is required. The urgency and nature of the symptoms and other circumstances must determine the course to be pursued. The presence of sterility is a frequent motive for attempting to give the patient permanent relief.

Mechanical Treatment of Dysmenorrhœa.

One method of treatment is not applicable to all cases. Nor is one particular physical condition always successfully dealt with in the same manner. We must endeavour in the first place to obtain an accurate idea of the physical condition of the cervix, the size of the canal above, below, and at the middle, its direction, the position of the body of the uterus in relation to the cervix, and the flexibility or want of tonicity in the uterus as a whole.

Three methods of treatment are possible. 1. Dilatation of the canal. 2. Enlargement by means of a cutting operation. 3. In cases of contortion or flexion of the canal, persistent mechanical rectification of the same.

The flexion cases being most numerous, the third of these methods of treatment is the one which is most generally required; the other procedures are necessary in a smaller number of cases.

The dilatation method is not only a dilatation: it involves also a straightening process, and this accounts for its success in many instances where this treatment has been adopted, on the view that there was stricture, the existence of flexion having passed unrecognised, or at all events unappreciated, in regard to its true bearing on the dysmenorrhœa.

Dilatation alone is often temporary in its effects, the parts frequently returning to their original state when left to themselves.

Next, as to the merits and demerits of the 'cutting operation.' By means of the knife we can of course enlarge the canal to any required extent. The wound so made has a great tendency, however, to close up again, and in some cases gives rise to formation of a firm cicatricial tissue, the presence of which is of course objectionable.

As a curative measure for dysmenorrhœa, the incision treatment certainly cannot be altogether dispensed with. Certain cases cannot be treated advantageously without it, but the tendency will be to restrict them within narrower limits than was the fashion three or four years since. The recognition of the frequency of flexions as a cause of dysmenorrhœa will have much to do with this alteration—which is really an advance—in the views entertained on the subject.

It will be convenient now to discuss the treatment of various special cases of dysmenorrhœa.

Treatment of cases dependent on *simple Flexion of the Uterus.*—The cure of these cases is often obtained by removing the flexion without any other procedure whatever. How this is to be accomplished has been described already in the chapter on Flexions. Here certain supplementary remarks are required. If the flexion be recent, the vaginal pessary, the oval ring for retroflexion, the 'cradle' for anteflexion, adapted to the case and properly fitted, sustains the uterus in its proper position, and keeps the canal straight and therefore patent, thereby relieving the dysmenorrhœa. This treatment, to be really successful by itself, requires that the uterus should be tolerably flexible, for otherwise the bending of the organ is either not removed, or the process is tedious and unsatisfactory. Conjointly with the use of the sound, employed at intervals in such a way as to bend the uterus gently and repeatedly in the opposite direction, the vaginal pessaries enable us to deal with cases where the affection is of longer standing; the cure proceeds slowly but surely. In a third class of cases the canal has become, by long continuance of the flexion, so deformed, and the tissues around it so altered, that a simple unbending of the organ is ineffectual for the relief of the dysmenorrhœa, and under these circumstances something more may be required. For the treatment of these long-standing cases the intra-uterine stem, whereby the canal is necessarily maintained not only straight but patent, offers an excellent resource, always provided that it can be so adjusted as to give rise to no irritation. The stem I employ is of ebonite, well rounded at the extremity, and not allowed to project into the canal farther than just inside the internal os. It is essential that the stem be supported below in such a manner that the uterus is held in its proper relative position to the vagina, i.e. nearly at right angles to it. The stem treatment is applicable mostly to cases of anteflexion; it is much more difficult to apply it to cases of retro-

flexion. The stem can be worn for weeks or months together, with proper precautions. At page 254 is represented the stem and its support, such as may be used in cases of anteflexion. At p. 245 is shown a stem pessary combined with ring pessary for certain difficult cases of dysmenorrhœa with retroflexion. Preliminary to the introduction of such a stem, the cervix may be dilated by tents, but this is not generally required.

In some instances, where the internal os uteri is difficult to deal with otherwise, an incision may be made at that situation, as presently to be described, the canal plugged with lint, and the stem introduced after an interval of a few days. Dilatation by tents, however, should never follow an incision, otherwise pyæmia is almost certain to occur. The incision plan has one advantage, that it gives rise probably to a little inflammatory effusion in the neighbourhood, and a chronic flexion may be benefited by this, in so far that it tends to produce rigidity and fixation of the organ in the shape which we wish to impart to it.

Experience has shown that tubes within the cervix uteri are useless. They soon become clogged and impervious. The solid stem allows the blood to escape by its sides, and, generally, menstruation occurs without interruption during the time the stem is worn, but the stem must not fit too tightly or a difficulty may occur. A further remark to be made is, that syringing the vagina with water at or towards the end of the flow, or afterwards, is generally advisable when the stem treatment is had recourse to.

Fig. 79.*

It is difficult to state the length of time necessary to use the stem in cases where its use is decided on. Thus, in cases of anteflexion of long-standing the dysmenorrhœa may be at once relieved, but it must not be taken for granted that therefore the patient is cured, for on discontinuing the stem the symptoms may at once recur. The other measures, use of the cradle pessary, &c., may require to be continued afterwards to cure the flexion, which we are now supposing to be the primary evil. In married women the best result is, that pregnancy should occur speedily, which, if properly managed, leads to a very satisfactory cure; but the uterus may otherwise not acquire a really satisfactory state in a long-standing case under a year or upwards, during the whole of which time it must have artificial assistance in keeping its proper shape.

* Fig. 79 represents the form and shape of a hook useful in drawing down the os uteri, to be used in conjunction with the duck-bill speculum. See also fig. 18.

Dysmenorrhœa due to *congenital narrowness of the whole cervical canal*, with an infantile uterus, or in cases when the uterus is otherwise well developed. Some of these cases are best treated by dilatation, with subsequent treatment by the stem pessary. For dilatation the tangle tents are very suitable. In some cases the incision of the internal os is required, and to accomplish this a partial division of the external os may be necessary. If the os externum be the only narrow part, incision is the proper remedy, the incised parts being kept asunder for some days by a plug of lint to prevent adhesion.

The cases of *hypertrophy and tortuosity of the cervical canal* are suitable cases for incision, the incision of the hypertrophied cervix also exercises a good influence on the hypertrophy itself.

Elongation, or conical condition of the cervix, combined with a flexed condition of the cervix, is not uncommon. The uterus is anteflexed in these cases. The result is more generally sterility, the dysmenorrhœa not being so often a marked symptom, though by no means is this a universal rule. Dr. Marion Sims advised amputation of the excessively long vaginal portion of the cervix and incision of the margins of the aperture at the same time. I have followed this procedure in several instances, and consider it satisfactory.

Flexion associated with a small fibroid opposite the internal os.—This is a cause of dysmenorrhœa very difficult to remove by operation; and the pain and discomfort attending such cases is often very severe. In some cases incision of the whole cervical canal does good, but it sometimes entirely fails in giving relief. The position of the tumour affects the result. Dr. Sims recommends an ingeniously devised form of operation for cases where the uterus is anteflexed, with a fibroid tumour in the anterior wall; viz., to incise the cervical canal in the middle line posteriorly, with the idea of thus obviating the effects of the flexion. I have not tried this latter operation, and cannot therefore speak from experience as to its utility. I have myself treated certain of these cases very successfully by the use of pessaries. A most troublesome case of dysmenorrhœa of this kind was treated with great advantage by a pessary adapted to prevent the uterus falling forward. The uterus was bent antero-laterally and to the left. The 'cradle' pessary, described in the chapter on Flexions, was modified to suit this case by projecting the left vertical arm considerably more backwards than the right (see fig. 57), the effect of which was to keep the uterus steady, and its canal tolerably

straight. The first period this pessary was worn was the only one for upwards of a year and a half during which the patient had not suffered.

The tumour is not always on the same aspect of the uterus as that on which it is bent. Thus we may have a fibroid tumour in the anterior wall opposite the internal os, conjoined with retroflexion. Dr. Marion Sims has alluded to this circumstance, and not long since I saw a remarkable instance of it. The patient suffered most intensely and severely from dysmenorrhœa; the uterus was sharply retroflexed, and just opposite the internal os was a stricture caused by a fibroid tumour in the anterior wall,

Fig. 80.*

compressing the canal at that point (see fig. 80). The whole uterus was in this case somewhat hypertrophied, and affected with chronic inflammation. The first thing to be done in this case was to treat the flexion; this was effected by a pessary worn in the vagina. (See chapter on 'Flexions.')

Chronic inflammation and induration of the cervical tissues may lead to stricture of the canal. The dysmenorrhœa thereon depending may be summarily treated by incision and subsequent

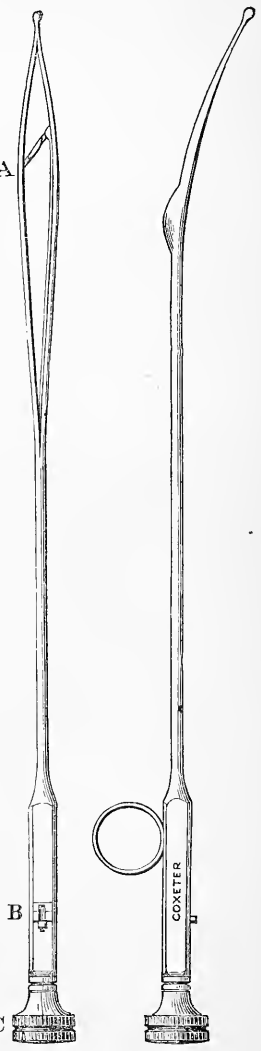
* Fig. 80. Chronic retroflexion of uterus with fibroid tumour in anterior wall.

dilatation. Conjointly with this, however, means must be taken by rest, astringents, cold, &c., to restore the tissues to a more natural state.

The Operative Procedures necessary for effecting Dilatation or Incision of the Cervix Uteri.

Dilatation.—The simplest method of treatment, and one which very frequently suffices, is that of introducing the uterine sound, or metallic bougies specially constructed for the purpose, into the uterine cavity, once or twice, on the days before the expected period, the instrument first used being adapted to the size of the canal, and a larger one being subsequently employed. This plan of treatment is only practicable when the canal is large enough to admit a sound at all, and when the canal is not excessively flexed. Dr. Priestley's instrument (see fig. 81) answers the same purpose. It is constructed on the same principle as Sir Henry Thompson's urethral dilator, and is a valuable instrument for dilating the canal in cases where the canal is not very small. Thus it can be employed in suitable cases of dysmenorrhœa or of sterility two or three times for as many successive days previous to the menstrual period. Dr. Marion Sim's cervical dilator is a very good one (see fig. 82). Other metallic instruments have been devised calculated to effect dilatation of the canal in a somewhat similar manner; the objection to which they are liable is, however, this, that they are liable to slip out in the act of expansion. Further, their action is limited, and when the uterine tissues are indurated such instruments are not satisfactory.

Fig. 81.



Another method of dilatation is the introduction of a series of metallic bougies, the first being small, and the size gradually increased. The result is good, and sometimes sufficient

enlargement can be procured at one or two sittings, but more frequently the time occupied in procuring the necessary result is too great. These bougies can be introduced by means of a suitable handle, without the use of the speculum. A conical-shaped metal bougie is sometimes employed, the cervix uteri being thus expanded, but the expansion is chiefly below, and hardly affects the canal higher up.

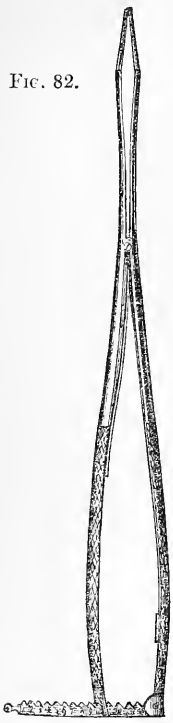


Fig. 82.

Sponge tents offer undoubtedly the most reliable means of dilating the cervix uteri. Dr. Sims offers some valuable remarks on this subject in his work. They must be made of good sponge, or they are useless; as a rule the sponge tents procured in shops are worthless. Great care is necessary in their employment, for otherwise they are very liable to produce troublesome consequences. It is by no means easy to introduce a sponge tent into a small cervix uteri, especially if the canal be a little flexed. When difficulty is experienced, Dr. Sims's plan is the best, the patient being placed on the side, the speculum introduced, and the os uteri drawn down slightly by means of a hook. It will be found necessary to hold the tent very firmly. This is best done by dressing speculum forceps, the pivot of which is near the farther end, so as to give a good leverage. I employ an instrument having also a rack and catch at the handles (see fig. 83). The tent must be rounded at the point, firm and hard, and the length and size adapted to the requirements of the case. A piece of cotton wool or lint must be placed in the vagina, so as to retain the tent *in situ*. In six or eight hours the canal may be thus greatly expanded. Sponge tents should not be allowed to remain longer than six or eight hours. They should never be used after any cutting operation has been performed on the os uteri, except after an interval of some weeks. The irritative symptoms they sometimes produce are best treated by opium and by application of turpentine stupes to the abdomen.

The stem of the sea-tangle (*laminaria digitata*), introduced by the late Dr. Sloan of Ayr, is now largely used for dilating the cervix uteri. It is hard, firm, swells out on being moistened to twice its dry diameter, and is very cleanly. One objection to it

is that it is liable to slip out before swelling has taken place. To correct this I generally place a length of about twelve inches of wetted bandage as a plug at the upper part of the vagina, which, together with the tent, is easily withdrawn. I have used them frequently, and consider that for producing a limited degree of dilatation they are very valuable. Several sizes should be kept. The introduction is effected in the same way as the sponge tents. Two or more of the tangle tents may be introduced, side by side, when it is desired to produce a greater dilatation of the cervix for exploring the uterus.

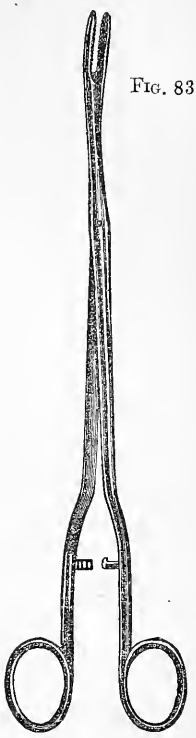


Fig. 83.

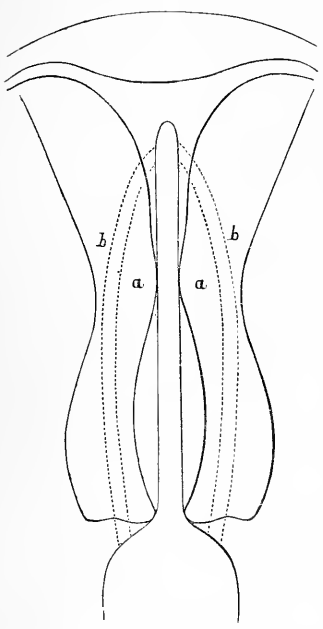
INCISION OPERATION.

Sir J. Y. Simpson first employed a metrotome caché, by means of which he effected an incision extending up to the os internum, first on one side and then on the other. The knife was guarded until the instrument had been introduced sufficiently far. Various modifications of this instrument have been employed. Dr. Greenhalgh's metrotome is double bladed, and by it a bilateral section of the cervical canal is made, rather wider below than above. Dr. Marion Sims employs a pair of strong curved scissors, by which the cervix is cut through on each side up to its junction with the vagina, and the canal above this point is then incised on each side by a small razor-bladed knife (see fig. 84) with a blunt point, to the extent required, the result being that an incision having a pyramidal shape and widest below is produced. Dr. Barnes uses the scissors in like manner as a means of opening up the lower part of the canal. Mr. Coghlan's metrotome is adapted for making an incision of the internal os; it has a probe point, and is then flattened out with a short cutting edge on each side. In some cases a careful use of a very small probe is required to inform us as to the direction in which the cervical canal goes, and a narrow director is now and then useful in guiding the knife when we are dealing with the internal os uteri.

Fig. 84.

Having tried the several methods, I prefer the use of the curved scissors and the small knife, believing that the operation is thus more certainly and accurately—and withal safely—performed. The patient is placed on the side, and the uterus held fixed by means of the tenaculum hook. (See fig. 78.) After the incision a small pyramidal-shaped piece of lint, steeped in perchloride of iron and glycerine, is carefully packed into the cervix, and to retain it *in situ* a piece of wetted bandage a yard or so in length is packed in the vagina. The bandage is drawn away at the end of twelve hours, but the cervical plug remains for two or three days. Subsequently, the finger is used daily to keep the wound from uniting, or every other day for a week or so. Troublesome symptoms rarely follow, but pyæmia or pelvic abscess are said to occur occasionally, and the operation is certainly not devoid of all risk. The difficulty in maintaining the aperture is great, and has been mentioned by all who have performed it. After a month or six weeks the wound may become greatly contracted, but the canal does not usually return quite to its former dimensions.

Fig. 85.



The annexed plan (fig. 85) represents the action of the bilateral metrotome, and it exhibits the dangers of it. The size of the uterus, as shown in this drawing, is that which is usually found in a patient suffering from dysmenorrhœa, and who has not had children. The outline of the uterus is copied from one of Dr. Arthur Farre's figures, and it is accurate. The metrotome is placed in utero, as it is represented in the catalogue of obstetrical instruments published by the Obstetrical Society. The dotted line *a a* represents the width of the incision when the blades are set so as to cut little; the dotted lines *b b* show the larger incision. A very slight deviation to one side would be sufficient to cut quite through the cervix in such a uterus as that here represented.

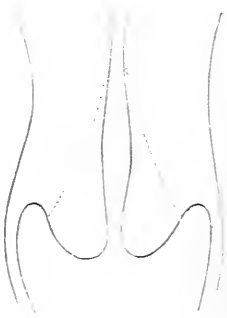
I believe that operators do not now incise so deeply as was the

case after the first introduction of the operation. My own conviction is, that the objects of the operation are generally secured by an incision stopping short of the internal os, and having a pyramidal shape, narrow above, wide below; the internal os itself being a little incised only by means of the Marion Sims knife.

The extent to which the cervix may be incised is that represented by the dotted line in the next figure (see fig. 86). The cervical canal is thus made sufficiently large to allow the operator to reach the internal os. I agree with Dr. Marion Sims in thus restricting the extent of the incisions practised.

The operation should be carefully performed, and the patient kept in bed for two or three days afterwards. Hæmorrhage can be always controlled by the iron, and by carefully plugging the wound.

Fig. 86.



I am far from entertaining a belief that the incision of the cervix uteri is all-powerful in the treatment of dysmenorrhœa, but in a certain class of cases it is of great assistance; sometimes by itself, at other times as a basis for further measures. Metallic or other tents may be subsequently employed, with the restrictions above mentioned.

It is the practice with some operators to introduce and leave a metallic self-expanding spring tent in the uterus immediately after the operation. I prefer to wait two or three days before employing any further means of active treatment, and then to use the uterine sound freely, so as to break up adhesions, every other day or so for a week. The ebony stem is preferable to other methods for afterwards preventing the canal from closing; for to maintain the patency of the canal at the situation where the contraction mostly happens—viz., at the internal os—is often a matter of extreme difficulty; mostly, however, in cases where there is flexion of the uterus. A stem of ebony acts in a double capacity, keeping the canal straight as well as open. The plug or stem in question is $1\frac{3}{4}$ inches long, conical in shape, with a bulbed termination. The diameter varies; the smallest has a diameter of $\frac{3}{15}$ of an inch at its bulbed termination. The stem ends below by a broad basis $\frac{1}{2}$ an inch in diameter, and is perforated for a short distance for facility of introduction, the ordinary uterine sound fitting into the perforation, and acting as a handle. The stem is retained in its place—for it has a great

tendency to slip out—by an oval support, made to fit the vaginal canal. The apparatus will be found described and figured at p. 254.

In order to introduce the instrument, the sound, as a handle, is passed through the gutta percha collar, and on it is placed the ebony plug. After the plug is placed *in situ*, the ring is made to slip up the sound until finally the little plug finds its place in the supporting collar. The sound is then withdrawn and the work is done. Only those who have attempted to introduce rigid plugs into a contorted or contracted canal, and to maintain them there, will appreciate the necessity or usefulness of this contrivance, which I have found to answer extremely well.

In a considerable number of cases in private practice I have used the apparatus as above described in one piece, the stem being soldered to the vaginal ring. This is rather more satisfactory, inasmuch as there is no possibility of derangement of the mechanism; but there is also a slight drawback to it, that it is more difficult to introduce, and, further, it must be very well fitted, otherwise the uterus may tolerate it less well than the other.

TREATMENT OF CASES OF IMPERFORATE OS UTERI.

In some rare cases the os uteri is imperforate congenitally, and there is no outlet for the menstrual fluid. And the os uteri may become occluded after labour, from effects of operations, &c. Under these circumstances, also in cases of physometra, we may be called upon to evacuate the contents of the uterus artificially.

In the congenital cases, we have to make a communication between the uterus and vagina in the best manner the circumstances may admit. We endeavour to find the os uteri, and not succeeding in this, search is made for the cervix. We may fail in discovering any trace of either, the distension of the uterus having obliterated all traces of it. In such a case a point is to be chosen which is nearest the supposed seat of the cervix, and the opening is to be made at that point, taking care that the instrument used be directed towards the centre of the enlargement, so as not to run a risk of wounding the bladder or rectum. In reference to the manner in which the uterine contents are to be allowed to escape, certain precautions are necessary. It is advisable to allow the fluid to escape very slowly; the reasons for which precaution have been already given (see p. 325). After the first part of the treatment—the evacuation of the fluid—has been gone through,

we have to take measures for maintaining the canal of the cervix open. This is not unfrequently found troublesome, there being a tendency to reclosure of the canal, necessitating a new operation. Gradual dilatation by means of bougies or by the use of tangle tents is most appropriate under such circumstances.

The puncture of the tumour from the rectum is only admissible in cases where the other operation from the vagina is absolutely impracticable.

In cases of acquired occlusion of the os uteri or cervical canal the canal is to be opened and made pervious by a carefully performed operation, the nature of which must be determined by the nature of the case. In many of these cases it is possible to find out the track of the old canal by means of probes, and, if this can be done, it renders further procedures more easy. A small canula and trochar, long enough to reach the uterus, is necessary to evacuate the fluid. The canal once opened, the occasional use of the sound, or of graduated metallic bougies, is required to preserve its patency.

TREATMENT OF CASES OF MEMBRANOUS DYSMENORRHŒA.

The treatment of the actual *pain* in these cases will be conducted on the principles already laid down. The object now is to determine how the disease itself is to be removed. The absolute cure of cases coming under this category is, however, a problem which yet requires solution, and the fact that the subjects of it are generally sterile, and not unfrequently extremely desirous of having children, renders this question additionally interesting. Scanzoni avers that he has been most unsuccessful in the treatment of the affection.

How far the condition depends on chronic flexion I have no data for deciding, but it is very possible that this may constitute an important feature. If so, the cure of such cases would be more hopeful than it has yet proved. I refrain therefore from indicating a special treatment. Hitherto treatment of all kinds as reported by various observers has been so unsatisfactory as to make it useless to mention the many remedies which have been employed.

CHAPTER XVII.

NERVOUS DISORDERS REFERABLE TO THE UTERUS.

A. Increase of Direct Sensibility of the Uterus.—1. Due to Inflammation. 2. The 'Irritable' Uterus; shown to be flexion of the Organ. Treatment.

B. Increase of Reflex Susceptibility.

1. Hysteria—General Nature—New Theory and Explanation of Hysteria traceable to Irritation proceeding from the Uterus. Treatment.

2. Epileptiform Attacks in connection with Uterine or Ovarian Irritation.——Cases Illustrative of this Connection.

3. Nausea and Vomiting.—Connection between these symptoms and Uterine Disease —Explanation of the connection in the Non-Gravid State between Flexions of the Uterus and Nausea and Vomiting—Extension of this mechanical Theory to the Explanation of obstinate Cases of Nausea and Vomiting in the Gravid State—Compression of the Nervous Tissues of the Uterus the proximate Cause—Other Conditions capable of Exciting the Symptoms. Treatment.

In this chapter it is proposed to deal with a very important subject. The present state of knowledge in all that concerns the relations subsisting between lesions of the generative organs and certain severe and obscure nervous derangements is confessedly inadequate and vague. I do not profess to have studied the subject in a complete manner, and the time at my disposal has been quite insufficient to put the materials I have collected into a satisfactory shape. But I venture, nevertheless, to give a sketch which may hereafter perhaps be used as the basis for a more complete and comprehensive dissertation.

We have two principal classes of phenomena referable to diseases of the nervous system, one consisting of alterations of sensation, another of alterations of reflex action. Under these two heads it will be possible to include what has to be stated in reference to this subject.

Respecting the uterus, in the first place, we have instances in which the uterus is excessively sensitive to the touch, and also painful. In the second place we have cases in which irritation in the uterus excites reflex phenomena.

A. EXCESSIVE SENSIBILITY OF THE UTERUS.

The cases in which the uterus is painful in consequence of inflammation, the result of injury, constitute, of course, a class by themselves. It is not here necessary to allude more particularly to such cases (see Acute Inflammation of the Uterus, p. 43). The cases of excessive sensibility of the uterus now contemplated are of a more chronic and obscure character, and they constitute an exceedingly important class of cases. Some years ago, Dr. Gooch, well known for accuracy and carefulness of observation, and for the possession of high qualities as a physician, described a disease which he denominated 'The Irritable Uterus.' Since the days of Dr. Gooch this disease has had a recognised place in uterine pathology. This condition of the uterus is one in which the uterus exhibits an excessive amount of sensitiveness and tenderness to the touch. In the 'Practitioner' of August 1st, 1868, I enunciated a new doctrine in reference to the irritable uterus, the accuracy of which my subsequent experience and observation appear to have amply confirmed.

Dr. Gooch described a typical case of 'Irritable Uterus' as follows:—

'A young or middle-aged woman, somewhat reduced in flesh and health, almost living on her sofa for months, or even years, from a constant pain in the uterus, which renders her unable to sit up and take exercise: the uterus, on examination, unchanged in structure, but exquisitely tender; even in the recumbent position always in pain, but subject to great aggravations, more or less frequently.'

So far the description is very accurate. Dr. Ferguson, who some few years since published an edition of Dr. Gooch's works, and the next writer on the subject, speaks of a congested condition of the uterus, '*altering its shape into that of a retort*,' as having existed in some instances, though he does not appear to have attached any particular importance to this retort shape of the uterus, or to have thought it anything more than an accidental accompaniment of the disorder.

Substantially, this is all that had been written or said on the subject, as far as I am aware, of importance, up to quite a recent period. In my paper in the 'Practitioner' I pointed out that the condition of the uterus described by Dr. Gooch is essentially dependent on Retroflexion of the organ, that the 'Irritable Uterus'

is, in fact, another name for Retroflexion of the Uterus. I can now repeat what I said on the subject upwards of three years ago, that, 'I have never met with a single instance presenting typical irritable uterus symptoms, *un*accompanied by the kind of alteration now alluded to.'

I look upon it, further, as an ultimate fact, which is demonstrable to anyone who will investigate the subject, that these symptoms classed by Dr. Gooch under the head of 'Irritable Uterus' are invariably associated with Retroflexion of the organ. The excessive sensibility appears to depend upon the compression which the nervous filaments in the uterine tissues undergo at the seat of the flexion; there the tissues are all forcibly compressed, and the compression of the nerves there situated is what appears to give rise to this excessive pain and tenderness. In Fig. 38 at p. 209 is represented the condition of the uterus in a well-marked case of Retroflexion. The part where the compression takes place is, it will be observed, at the junction of the cervix and body of the uterus. Fig. 39 at p. 210 represents a more advanced stage of the disease. Another very important condition resulting from this compression at the centre of the uterus is great congestion of fundus of the uterus. One of the most marked cases of irritable uterus I have seen was that of a lady in whom a fatal result was threatened from the inanition consequent on excessive vomiting. In this case, the patient could not bear the finger to touch the displaced fundus; indeed, when the finger touched any part of the uterus, the patient almost went into convulsions from the extreme torture produced. This degree of sensibility varies, of course, in different instances, but it is a marked feature of such cases.

Is it possible for this irritability to exist in cases of Anteflexion as well as in cases of Retroflexion? I have seen somewhat similar symptoms in cases of Anteflexion, but I have never seen the typical symptoms so well marked when the uterus is bent forwards as when it is bent backwards, but, unquestionably, Anteflexion is capable of producing symptoms of a somewhat similar character to those described as cases of Irritable Uterus. In the chapters on 'Flexions' will be found remarks concerning the pathological condition of the uterus bearing on the matter now under discussion. It is for those who contend that this irritable state of the uterus is not due to severe flexion (generally retroflexion) of the uterus to prove the negative, but I feel certain that the explanation I have given is the true one. This excessive sensibility of the uterus constitutes a most severe disease, incapacitating the patient

from going into society—sometimes from even moving about in an ordinary manner—and rendering her a confirmed invalid.

To pass away for a moment from the subject of the 'irritable uterus,' properly (or improperly) so called, it must now be stated that undue sensibility of the uterus is very frequently indeed present in cases of Flexion; is, in fact, one of its most common accompaniments. It is, according to my experience, most rare to meet with an unduly sensitive state of the uterus *not* associated with Flexion. I have met with cases of excessive sensitiveness of the uterus in association also with small fibroid tumours of the uterus, situated in such a position as to compress the cervical canal, but such cases are very rare.

The success of treatment of cases of 'irritable uterus' based on the foregoing explanation offers the most convincing proof of its soundness. The sensitiveness always undergoes a most marked and decisive diminution on straightening the uterus, even in very long-standing cases, (see treatment of Retroflexion), while in cases of shorter duration the cure is rapid in the extreme.

TREATMENT OF PAINS REFERABLE TO THE UTERUS.

The cases of acute inflammation of the uterus have been dealt with already (see p. 45). The cases of so-called 'irritable' uterus require, of course, primarily, a mechanical treatment (see Treatment of Retroflexion of the Uterus). There remain to be indicated the measures for relief, temporary or otherwise, of the actual pain produced by these various causes.

Local depletion by means of leeches applied to the os uteri or inside the upper part of the thighs, or over the hypogastric region, is useful when the disorder is attended with acute congestion of the uterus, as palliative and as subsidiary to more radical measures.

Counter-irritation is a most important agent for the relief of the various pains now under consideration. It may be employed in a variety of ways, the plan selected being in accordance with the peculiar requirements of the case. A severe, sharp, acute pain is best met by application of a strong mustard poultice over the hypogastric region, or round the loins; this is to be repeated at intervals. Turpentine dropped on a piece of flannel wrung out of boiling water, and applied to the skin, is another counter-irritant, even quicker in its action than the mustard poultice.

In cases where the pain is less acute, but more continuous, the counter-irritant selected must have a more continuous action. Ordinary blisters here serve the purpose very well. Tartar emetic suspended in oil, or in the form of an ointment, is a very convenient application: croton-oil liniment is equally applicable. Issues and setons are sometimes necessary in long-standing cases, and it is probable that they might be used with advantage to a greater extent than is at present the case.

Warmth.—Hot poultices of linseed-meal or bran are most valuable for the relief of the pain present in all kinds of inflammatory affections. They should be large, quite a third of an inch in thickness, and applied very hot. Several layers of flannel wrung out of boiling water, and rolled round the pelvis, offer a ready means of applying warmth. The warm hip-bath may be used for a like purpose. Bottles of hot water, or hot bricks wrapped up in flannel, are household remedies of every-day use. A warm decoction of poppies is often advantageously substituted for simply hot water for fomentations. The application of *cold* is not without its uses; but, as an anodyne, warmth is generally far more serviceable.

Anodynes.—The internal anodyne most ordinarily available is opium. The instances are innumerable in which we employ this most valuable drug, in one form or other, for the relief of pain. In cases of long-standing disease, opium should be given cautiously, and for this reason, that otherwise there is a fear of making the medicine a necessity for the patient, the habit of taking opium being one easily acquired and not readily broken off. The 'liquor opii sedativus,' of Battley, is one of the best forms in which to use the medicine in question. Opium is often combined advantageously with some of the æthereal preparations. A draught containing 'Battley' and the compound spirit of sulphuric ether is one of the best remedies for the relief of severe non-inflammatory pain referable to the uterus or ovaries which can be employed.

In chloroform we have an agent often of great service. Complete anæsthesia, by means of inhalation of chloroform, is not often required, except in cases where pain is very severe, or in order to facilitate operative manœuvres of various kinds. Taken internally, in the form of chloric ether, it is very useful as an adjunct to opium. The preparation known as 'chlorodyne' is one very largely used, combining, as it appears to do, the effects of the two therapeutic agents in question. The cases in which

chloroform and its combinations are most valuable, are those in which there is an hysterical element present; the cases in which opium and its preparations are most imperatively required are those in which there is organic disease, e.g., cancer of some one of the generative organs. In cancer of the uterus, the value of opium is quite inestimable. Belladonna, hyoscyamus, and conium are uncertain, and therefore often very unsatisfactory, remedies for the relief of pain, compared with those just mentioned. The Indian hemp is, however, better entitled to consideration, and in many cases undoubtedly exercises a marked influence in allaying or preventing pain.

Camphor and Indian hemp combined, I have often found of great service. Indian hemp is a medicine which, so far as my experience goes, appears to affect different individuals very unequally.

Local application of anodynes is often attended with good effect. The endermic application of one of the salts of morphia is the most potent of these. Dr. Henry Bennet states that he has found a hypodermic injection of a solution of morphia, about equal in strength to laudanum, over the præcordial region, very useful in relieving uterine pain. Chloroform dropped on a piece of lint, and applied over the uterine or ovarian regions, is a remedy now and then very useful for the relief of temporary pains in these regions. Tincture of aconite may be rubbed in with a like object. Suppositories or enemas, which are in a manner local remedies, offer frequently a ready means of inducing cessation of pain in the pelvic organs. The solid opium may be employed for this purpose, or the tincture of opium suspended in water-gruel, or mixed with tincture of valerian or assafœtida; the latter combination is particularly useful in hysterical cases. Opiates and sedative remedies may be also used locally, by making them up into the form of pessaries, which are inserted in the vagina.

Other Remedies.—Camphor, alone or combined with opium, is of service when the pain present is of spasmodic character. The various remedies known as 'antispasmodic' fulfil a like indication, and, as already observed, the æthereal preparations are most important for the relief of certain kinds of pain. The pain associated with uterine contractions, such as is present in cases of difficult menstruation, is best influenced by the use of antispasmodics. The compound tincture of lavender, chloric ether, and the compound spirit of sulphuric ether, may be often very

usefully associated (twenty drops of each for a dose), opium being added or not, as may be judged necessary; this forms a combination adapted for these, and, indeed, all cases where there is pain of a spasmodic character, whether at the menstrual period or at other times; this 'red' mixture is one which is very highly approved of by patients.

B. INCREASED REFLEX SUSCEPTIBILITY, REFERABLE TO MORBID CONDITIONS OF THE UTERUS.

I pass on now to the consideration of cases in which reflex phenomena of a disordered character are present, and distinctly referable to disorder of the uterus. An irritation of one part of the body may give rise to very curious phenomena in another part of the body. Some of the most remarkable of these phenomena are known as Convulsions. Thus, convulsions are often originated by irritation in the rectum, in the vagina, in the intestines, at the nipple, on the surface of the skin, the mucous membrane of the nose, &c., there being hardly a situation in the body, which, being irritated, may not originate a reflex action of some kind or other. The uterus comes under this category.

1. HYSTERIA.

Irritation of the uterus, or in the uterus, is capable of originating reflex phenomena. This introduces us directly to the consideration of one of the most curious—indeed, one of the most remarkable—diseases which infest the human family, viz., *Hysteria*. In considering the subject of hysteria, I feel that I am endeavouring to handle a subject treated of ever since medicine was a science, but never satisfactorily. The investigations concerning it have never come to a point, have never resulted in any proposition or position calculated to receive universal acceptation; its nature is confessedly open, in fact, to doubt. My early reading on the subject of hysteria was of a general and promiscuous character, but it was such as to give me the impression that there was very little to be learned about it. Much that was stated seemed vague and contradictory, and the endeavour to make a satisfactory study of the subject appeared to be so much time thrown away. Nor do I profess at this moment to have studied the subject completely from a literary point of view; but I have been carefully observing the facts which have come before me.

One of the most recent writings on the subject of hysteria is that of Professor Reynolds, viz., the article, 'Hysteria,' in his 'System of Medicine.' I have met with nothing which more exactly and closely describes facts which have come under my own notice. Dr. Reynolds defines 'Hysteria' in the following manner:—

'The essential character is an exaggeration of involuntary motility, and a diminution of the power of the will; the emotional, sensational, and reflex movements are in excess while the voluntary are defective . . . . . reflex movements which in health are under some control, are not only exaggerated in their individual intensity as a part of the hysteric state, but, from the weakness of volition, are allowed to run such riot that they pass beyond all bounds of healthy influences.

Another paragraph from Dr. Reynolds is as follows:—

'Hysteria is not necessarily associated with disease or derangement of the generative organs of either sex. Such association may and does very commonly exist, but the true nature of the malady may be overlooked if regard be paid to that particular relation.'

Such are the characteristics, in general terms, of hysteria. It is not necessary to describe those various phenomena which, being present, constitute hysteria, as ordinarily defined. Hysteria is, it is now quite certain, a disease which is not confined to the female sex, and the essence of the disease is, unquestionably, as Dr. Reynolds says, an exaggeration of involuntary motility, the sensational and reflex movements being in excess. Such a condition obviously may exist in a man equally with a woman, but not to such a degree, inasmuch as the woman is more liable to emotional, and, I think it may be said, to reflex disturbances. This is, probably, the reason why hysteria is so much more prevalent in the woman than in the man. I do not propose to investigate the subject of hysteria in the male sex. What we have to do here is to determine how it originates in the female sex.

There seem to be two ways, or methods, in which this disease may originate in the female sex. One, A, is from *external* emotional disturbance; thus, the reception of distressing news, fright, an alarming piece of intelligence, a mental shock of any kind, may originate, in a woman who is predisposed, that condition called 'hysteria.' Or, B, the exciting agent is from within. Under this class will come those cases in which the irritation or disturbance proceeds from within, and where there is an *internal* organic

disturbance. Under class A will be classed *emotional* disturbances; under B, *organic* disturbances.

Now, the category A sufficiently explains itself. It is the category B which requires elucidation; it is this which includes the majority of cases of hysteria in the female sex.

The cases coming under class A are few and comparatively unimportant. A perfectly healthy person is confessedly liable to hysterical attacks arising in the manner I have pointed out.

The cases coming under class B are those in which an organic internal disturbance is the cause of the hysteria. This hysteria is more or less chronic, and more or less constantly present. It sometimes becomes exaggerated, but there is a general chronic condition of hysteria present in a considerable number of instances of hysteria in the female sex, and it is those cases I desire to investigate particularly and more fully. The views which have been expressed on the subject of hysteria have been most opposing. Two classes of opinions have been entertained. On the one side, we find physicians in general practice, and acquainted with the diseases of the body generally, rather than with those of the generative organs; on the other side, we find physicians or surgeons in special practice, or, at all events, more specially acquainted with the diseases of the generative organs. If we compare the ideas of these two classes of practitioners, we get directly opposite views. On one side, hysteria is held to be a general disease, not necessarily dependent on the generative organs. On the other side, it is held that the disease is very intimately and closely dependent on the generative organs. To the latter statement it is replied by the general physicians—not in so many words, but virtually—in these terms:—'Show us some one condition of the uterus or generative organs universally associated with hysteria: if you are in a position to do that, your argument will be deserving of consideration; but, seeing that you have failed to do this—that you ascribe hysteria now to inflammation of the os uteri, now to ulceration, now to an undue predilection for sexual intercourse, now this, now that or the other, affection of the generative organs—how are we to reconcile these diverse statements? We, therefore, fall back on the hypothesis that hysteria is a general disease.' Thus, Dr. Reynolds, speaking of disordered conditions of the menstrual function as the cause of hysteria, well observes:—

'It has not been yet shown that it has any definite relation 'to the varying conditions of menstruation. In an individual 'already hysterical, there is more than usual disturbance at or

'near the monthly periods, and this is exaggerated by any kind 'of irregularity which may exist. Hysteria may exist to the 'highest degree in individuals who have presented no anomaly 'whatever in regard to the menstrual functions.'

With this statement of Dr. Reynolds I entirely agree; it appears to be an expression of the fact.

Many eminent, nay, most eminent writers on the subject of the diseases of women have warmly contended for the existence of a connection between the diseases of the generative organs in the female sex and hysteria. They have not as yet demonstrated or satisfactorily explained that connection, but I believe that such a connection yet subsists. I believe that the organic disturbance of which we are in search, the irritation giving rise to these reflex phenomena, is to be found in the generative organs. The question is, What *is* that irritation? The theories which have hitherto been broached on the subject are unsatisfactory. My conviction is that the solution of the matter is to be found in the consideration of the irritation produced by flexion of the uterus. I believe that that irritation which in some cases is sufficient to produce the long-continued pain which I have described under the head of 'Irritable Uterus' is capable of exciting those reflex phenomena we are familiar with under the name of Hysteria. I had started with no definite idea of any kind as to the nature of hysteria, and it is only comparatively recently that I have come to any generalisation on the subject. I have refrained from expounding these views in anything like a definite manner up to this time, thinking it more prudent to wait until my observations were sufficiently numerous and precise for the purpose. But the more I see in connection with this subject, the more I am convinced that when there is an organic cause for hysteria in the female sex, and, under the circumstances previously mentioned, that cause will be found to be a chronic flexion of the uterus. One of the most typical cases illustrative of the position now contended for which I have ever seen was one I have before alluded to—a case of chronic retroflexion. This lady was the subject of chronic flexion for thirteen years, which time had elapsed when I first saw her: she had been, from time to time, subject to remarkable hysterical attacks, which occurred once in two or three weeks, or oftener, generally after some unusual exertion, and she frequently remained in a state of quasi-insensibility for some time. When I saw her first, a slight examination of the uterus threw her into paroxysms of agitation, followed by

hysterical phenomena. These hysterical attacks entirely ceased as soon as the shape of the uterus began to be corrected by treatment. I have found flexions of the uterus originating hysteria in a similar way in the cases I have noticed,—I was about to say, in the large majority of those cases,—but I may say in all. I do not recollect to have met with a single exception. Hysteria, thus originated, is most commonly observed in association with cases of anteflexion, and the hysterical reflex phenomena are most commonly observed in such cases; but it is also observed in cases of retroflexion. Anteflexion of the uterus to a slight degree is a common affection, and slight hysterical phenomena are not uncommon, as in young women at the first appearance of the catamenia for instance, also in cases of young women who, being weak, have to walk about a good deal, and take much exercise.

When a young woman, having enjoyed good health up to a certain time, has become suddenly liable to hysterical attacks, it is almost certain that the uterus, in such a case, will be found to be affected with marked flexion, and most probably with anteflexion. Recently an instance of this kind was under observation in University College Hospital. It was a very instructive one:—

M. L., æt. 19, a native of Guernsey, was admitted into the wards of University College Hospital in October, 1870, suffering from aggravated hysteria. The patient was shortly transferred to me. Mr. Newington, then acting as Physician's Assistant, has kindly furnished me with the particulars of the case:—

'The patient, who was single, had for the last three years followed the occupation of dressmaker. Up to two years ago her health was very good, but about that time she was taken suddenly ill with "hysterics," and had frequent fits for one year, after which they became less frequent. Can assign no reason, such as fright, for the attack. One year ago she lost her voice for five months, had galvanism applied to her throat, recovering speech suddenly. After that, had a cough, which lasted to present time. She has only menstruated *once in the two years*. On admission, her cough was incessant, each expiration being a "hack," occurring about thirty times in a minute. Valerian and sulphuric ether, in large doses, had no effect; chloroform gave instant, but very temporary relief; ice, applied to the spine, stopped it, however, and the mere exhibition of the bag checked any appearance of recurrence. Since this, the cough, though troublesome at times, has not been a prominent symptom. In the evening she made a very good imitation of an attack of extreme dyspnœa, under which a neighbouring patient was suffering. The ice-bag stopped this also.

Condition following morning:—Patient not confined to bed; busies herself about the ward. No evidence of organic disease, no emaciation, slight chlorosis and anæmia, an undefinable look of ill-health, tongue thickly coated with white fur, no appetite, thirst, pain on eating, which is instantly relieved by vomiting; bowels much constipated, complains of pain in hypogastrium, which is worse at times when menses should appear. She has not seen anything for twelve months. She says that she is very depressed; has many evidences of hysteria about her; complains now of localised pain near the sagittal suture, lump in throat, soreness of throat, and some loss of voice (attributed by her to the cough mentioned above). Heart and lungs healthy. Pulse full and regular. No suppression of urine, which is tolerably copious, acid, sp. gr. 1020, normal colour, slight clouds of mucus, but no albumen or sugar. No hyper- or anæsthesia of surface. Can use all her limbs. States that she has been taught by a practitioner to use an enema apparatus herself, without which she has not had her bowels open for months. She continued in this state, improving slightly; various medicines were tried—valerian, assafœtida, ammonia, iron, bromide of potassium, &c.—but none with any marked effect. She was sent out of doors as much as possible. The vomiting was decidedly lessened.

'On the 25th of October, however, she was seized with a well-marked hysterical fit. She tried to get the upper half of the body out of bed, so as to beat her head against the floor. (In this, as well as in her subsequent attacks, she *really* did her best to hurt herself, blows being no sham.) She uttered cries much resembling Laryngismus stridulus. She complained of her head. Cold douche continued at a high pressure for some time before she became quiet. Valerian and ammonia ordered. The same evening she expressed sorrow for giving so much trouble, and said she could not help it. Was able to go out the next day.

'October 29th, at 11 A.M., a worse attack came on. Douche for an hour. She was then put to bed, being quieter. Ten minutes after she was worse than ever. A camisole was put on (she was immensely strong) and she was removed to a private ward. Slapping of the face, and placing of strong liquor ammoniæ under the nostrils, however, had no effect, but she was quickly subdued by Dr. Hare's plan of suffocation. She had another attack a little time after, when the class entered the ward. When she came out of this she began to cry, and denied that she knew of anything that had been going on. Subsequent to this, she had many similar attacks, sometimes as many as five or six in a day. They were all stopped by the suffocating process.'

Such was the account of this case up to the time of my seeing her. On November 9th, I proceeded to make an examination, for which purpose chloroform was administered. I found that the uterus was acutely anteflexed, admitting the sound, however, without much difficulty, when properly directed forwards. The uterine canal was found to be slightly

shorter than ordinary. I at once applied a stem-pessary, retained *in utero* by an oval disk of gutta percha placed in the vagina into which the stem fitted. A dose of opium was directed to be given. I saw her occasionally afterwards, but subjoin Mr. Newington's notes of the case :—

'After this (the application of the pessary) she had very few fits, less marked, and soon they ceased, and have not returned. Catamenia, slight and transient, however, appeared at intervals, longer than normal, attended with considerable pain.

'December 11th.—Made an out-patient. No particular treatment, except strychnia for the constipation. The treatment was entirely successful. The pessary was taken out about February 14th, 1871, and at the end of the same month she returned home, cured in every sense of the word.'

This case I have described in detail, because it brings out, accurately and succinctly, some of the various points of interest. Other cases, not such as this, because such are not very common, but which tell the same history of the evident connection between flexion and hysterical phenomena, and the evident connection between the cure of the flexion and the cure of the hysteria, might be cited.

The condition of the uterus, an irritation at which part I regard as the exciting cause of the hysteria, as above explained, and with the restrictions mentioned, is a question of great interest. In one of the previous chapters I have endeavoured to explain the mechanism of congestion of the uterus in cases of flexion (see p. 34), and have used the word 'strangulation,' as descriptive of the condition of the uterus under certain circumstances of the kind. When the paper there referred to 'on Strangulation of the Uterus' was read at Leeds, Dr. Aveling, who was present, pointed out that the same expression had been used by certain of the old medical writers in describing hysteria. Ætius speaks of 'strangulatio uteri,' which starting from the uterus excites the hysteric paroxysm. Paul of Egina uses the term 'Strangulatio vulvæ' in much the same sense. It is the fact that in employing the term 'strangulation of the uterus' I had no idea that it had been used before. As used by Ætius, however, it is intended to convey another idea, that idea being one of choking or strangulation, suggested doubtless by the choking sensation in the throat experienced by the patient. By strangulation of the uterus, however, I wish to be understood a definite impediment to the circulation in the organ of the same kind as occurs in strangulation of the bowel in hernia.

The ancient appellation, therefore, really fits in very well with the explanation which an attentive consideration of the pathology and effects of flexions of the uterus has led me to adopt as to the exciting cause of those cases of hysteria coming under category B, previously defined. The uterine circulation is temporarily impeded, strangulation results, and hence the hysteric sensation and paroxysm. It seems probable that the pressure on the nervous structures brought about by the congestion, or by the exaggerated and intensified flexion, one or both, causes the reflex disturbance we denominate hysteria.

Flexions exist without giving rise to hysteria. Hysteria may occur in cases where there is no flexion. Both these propositions are true; but the truth of these propositions does not in any way invalidate the explanation above given.

There are other conditions of the uterus which may, reconcilably with the views above expressed, occasion hysterical symptoms. Such are the presence of growths in the uterine walls, e. g., fibroid tumours, which may exercise pressure on the nervous structures. Fibroid tumours are occasionally the cause of hysterical phenomena.

Has the ovary any influence in the production of hysteria? It seems to me probable that it has. But what the precise nature of that influence may be I confess myself unable to determine or define. I can only add in conclusion that in all the severe cases of hysteria I have witnessed since my attention has been attracted to the subject decided flexions of the uterus have been found to be present.

TREATMENT.

The indications for the treatment of hysteria are two-fold. *First*, to remove or ameliorate the susceptibility of the patient to impressions from without or from within, and, *secondly*, to remove the exciting cause whatever that may be.

The general treatment of such cases is therefore a matter of great importance, for, whatever views may be entertained as to the nature of the disease, experience has amply shown that general treatment, consisting of sound physical and mental training, is capable of effecting considerable improvement.*

As preventive measures, fresh air, moderate exercise, nutritious food, occupation and exercise of the mind in some useful pursuit,

* See Mr. R. B. Carter's work on the 'Pathology and Treatment of Hysteria,' an able exposition of the subject from the 'general' point of view.

are undoubtedly to be recommended. In regard to bodily exercise, caution must be exercised, for much mischief may result from over exertion in a weakly subject. The emotional faculties should remain in abeyance so far as is practicable.

Marriage is on the whole to be recommended, but marriage is liable to increase the malady unless pregnancy occurs. My experience is that the condition of the uterus, which produces hysteria, is not seldom the cause of sterility after marriage.

If the hysteria has nothing to do with the uterus and no uterine lesion is discoverable, general treatment only will be applicable.

But when the uterus is affected with a decided alteration of shape, general treatment, though not without its advantages, will very frequently be quite powerless in removing the liability to the disease. The means of remedying these alterations in the shape of the uterus which have been already described (see Treatment of Flexions) must then be put into requisition. The shape of the uterus must be restored, and the organ maintained in a state of rest. The treatment has yet to be tested by other observers, but what I have seen of it in my own practice enables me to affirm that when it is made impossible, by mechanical or other treatment, for the uterus to become further bent (a previous rectification of its shape having been properly carried out), the symptoms do not recur.

Palliative Measures. — Distressing symptoms presented by hysterical patients, and for which relief is most urgently sought, are, flatulence, headache, and pain in the side. The flatulence is best treated by cordials; ginger, sal-volatile, and ether, may be given for this purpose in combination. Relief in this way is of course only temporary, and the dyspepsia, on which the flatulence depends, must be treated by suitable measures. An assafœtida injection has been found to afford temporary relief in some cases. Opiate liniments are often serviceable; counter-irritation of the whole surface of the skin by use of flesh-brushes is very serviceable in the general treatment of hysterical patients.

In reference to headache, the same remarks as to the necessity for general treatment hold good. I have found both opiate and chloroform liniments of great service. Bark, in the form of the 'liquor cinchonæ,' is a valuable remedy in many cases where there is severe headache associated with anæmia. Cannabis indica, ether, valerian, and other antispasmodics, are often also necessary in these cases.

Paroxysms of Hysterical Convulsions must be guarded against

by preventing the application of the ordinary exciting cause, whatever that may be. For the relief of the paroxysm itself, a variety of methods have been recommended. Dashing of cold water in the face is one of the most efficacious, though, for a variety of reasons, it cannot always be adopted. Chloroform inhalation is very effective. Application of burnt feathers or other strongly smelling substances to the nostrils is often efficacious. Valerian, castoreum, assafœtida, ether, musk, camphor, are the drugs most commonly had recourse to, either in cases where the paroxysm is imminent, or, when it has ceased, with the view of preventing its recurrence. These remedies may be given singly, or two or more may be combined. Injections of cold water into the stomach were found very efficacious in arresting the paroxysm by Cruveilhier, and also by Dr. Ashwell. Injection of iced water into the rectum has been also recommended. Dr. Hare has introduced the plan of arresting the paroxysm by temporary suffocation of the patient.

2. EPILEPSY AND EPILEPTIFORM ATTACKS IN CONNECTION WITH UTERINE OR OVARIAN IRRITATION.

Another class of nervous phenomena which require to be considered in this place are those in which the disorder is of an epileptic character.

It seems pretty certain that epilepsy is a disorder not by any means intimately connected with disorders of the generative organs; but it does appear that disordered conditions of the generative organs do in some few cases originate epileptic seizures, and in some few cases where they do not originate such attacks, operate as the exciting agent of the attacks.

An irritation in the generative organs of the woman may thus excite in a reflex manner epileptiform seizures.

It is reasonable to infer that the impression so exciting the attack may proceed either from the uterus or the ovary.

I have seen some few cases in which the connection between disorder of the female generative organs and epileptiform seizures appeared to be well substantiated.

Most of the cases in which evidence of such connection is present are cases of suppression (positively or comparatively) of the menstrual flow, there being a coincidence between attacks and diminution or absence of, the usual monthly hæmorrhagic discharge.

The enquiry might probably be profitably extended further, but the facts in my possession refer only to the *connection between amenorrhœa and epilepsy.*

Let us admit, for the sake of argument, that amenorrhœa may excite epilepsy. How does it do so? Does the irritation in such cases proceed from the ovary or the uterus? The question seems to me difficult to decide.

I cite here a very interesting case observed in University College Hospital:—

A. O., æt. 17, housemaid, was admitted on March 21st, 1870, into University College Hospital. Menstruation has never appeared. For the last ten weeks the patient has been suffering from 'fits.' She has been for a short time a patient of the Hospital for Epilepsy. At first, for three or four weeks, she used to have as many as sixteen or twenty in the day, but they subsequently became less frequent. At the present time the patient has had six or eight in the twenty-four hours, but there is variation in this respect. The patient went into service when ten years old, and has only given up her work the last ten weeks.

For the last three or four months she has suffered from occasional sharp pain in the hypogastrium, shooting down the front of both thighs. No pain in back. Cannot walk far without getting tired. Patient has had frequent micturition for the last few months, and the urine has occasionally dribbled from her. Appetite very indifferent. Bowels regular. There has been a discharge from the left ear, occasionally, for several months. On vaginal examination a distinct tumour is felt in front of cervix uteri, os turned slightly backwards. Sound passes in natural distance, and without much difficulty. A cradle pessary (made from No. 3 ring) introduced.

March 24th.—To-day patient has had six fits; they last, on an average, about ten minutes. When a fit comes on, there is a sudden suppression of consciousness and volition, and patient remains during the attack in the same position in which she happens to be at the commencement, or in any position of body in which she is placed during the seizure. When she is recovering, the spasms cease, and in a short time afterwards she becomes conscious, and complains of giddiness and headache. Ordered to take a draught containing aromatic spirits of ammonia, spirit of chloroform, and tincture of lavender, every four hours.

Two days later it is noted:—Has an occasional sharp pain in abdomen. Headache very bad. Patient is hardly ever free from headache. Had nine fits yesterday. To take one grain of opium at bed-time.

March 29th.—No fits yesterday, and only *one* to-day, which lasted a quarter of an hour. Abdomen very painful last night. To take hydrate of chloral grs. xv. every night. Ordered a simple enema every other morning.

April 1st.—Patient has had *three* fits to-day, but only had *one* yesterday, lasting five minutes. Chloral increased to grs. xx.

April 6th.—To discontinue the stimulating mixture. Ordered instead, one drachm of the syrup of iodide of iron twice a day, and an alterative pill (four grains of blue pill) alternate nights. Still has occasional sharp pain in abdomen. Has had *five* or *six* fits to-day, one of which lasted twenty minutes.

April 10th.—*Nine* fits. Has been free from headache to-day, except for a short time after the fits.

April 16th.—*Seven* fits. Is quite free from pain in the abdomen. No discharge from ear lately.

April 22nd.—Discharged. Is still wearing a cradle pessary, and ordered to continue the syrup of iodide of iron and the alterative pills. To remain at rest on the back as much as possible.

June 28th.—Visited the hospital. Note as follows :—Three weeks ago last Friday (June 3rd), menstruation appeared for first time, and lasted three days. On the third day of menstruation she had one fit, on the following day none, and *has had none since.*

Patient looks well, eats and drinks well, can run about easily, is still wearing a cradle pessary. Medicine, as ordered above, was taken for about a month.

On a subsequent visit to the hospital, the patient reported herself as quite well.

The foregoing case may be criticised from various points of view. Was the irritation, which presumably excited the convulsive attacks, seated in the ovaries or in the uterus ? or was it merely a coincidence, that the appearance of menstruation and the cessation of the fits occurred together ? The latter view cannot, I think, be upheld. It may, however, I think be reasonably supposed either *a*, that the impediment to the circulation in the uterus, produced by the anteflexion, delayed the occurrence of menstruation, the uterus being thus considered to be the direct source of the irritation ; or *b*, that the ovaries were the real seat of the irritation, and that the case was one of epilepsy, produced by absence of action of the ovaries. The former of these two views seems to me to be the sound one. It must be stated, also, that another feature in the case—the liability to a discharge from the ears—was not disregarded in the formation of the diagnosis. It is quite possible that the convulsive seizures were due to irritation seated in some part of the auditory apparatus.

Individually, few cases are by themselves of service as affording conclusive proofs of the truth of any one theory. The foregoing

case is no exception to that statement. But though unable to cite any other case which so decidedly exhibits evidence of the connection between uterine irritation and the occurrence of convulsive seizures of an epileptic nature, yet I am able to state that I have seen others in which the same connection appeared to be present, and in which the convulsive seizures observed, if not purely epileptic, were yet not decidedly hysterical in their nature. Apart from this, it may be questioned whether it is necessary to endeavour to place convulsive seizures excited by uterine irritation decidedly into one or the other category. Hysterical attacks and epileptic attacks have their typical character, but there are convulsive seizures which it seems not possible to refer to either of these categories.

3. NAUSEA AND VOMITING.

This symptom is to be regarded as another of the results of reflex irritation proceeding from the uterus. It is only within a quite recent period that a reasonable explanation of that nausea and occasional vomiting, which is not rarely witnessed in connection with uterine disease, has presented itself to me. In the former edition of this work little was said on the subject, but it appears now possible for me to discuss the question advantageously.

In a paper presented to the Obstetrical Society of London, 1871,* I ventured to propound what is substantially a new view of the cause of the vomiting of pregnancy, or, at all events, new in the sense that the generalisation put forward in the paper in question had not been before made.

Considerable objections were on that occasion urged to the theory advocated in the paper just referred to, but I have as yet heard nothing which appears seriously to invalidate the position there taken up.

Nausea and vomiting are associated with pregnancy. Nausea and vomiting are associated with disease of the uterus. Both these propositions are true. But nausea and vomiting are not *always* present in cases of pregnancy, nor are these symptoms always present in cases of uterine disease.

Looking at the question from a broad point of view, it is quite evident that the condition (whatever that may be) which gives rise to nausea and vomiting in cases of uterine disease is *pos-*

* *Obst. Trans.* vol. xiii., 'The Vomiting of Pregnancy: its Causes and Treatment.

sibly the cause of the symptom in the more ordinary case of pregnancy.

Unquestionably, the occasional obstinacy of the symptom, its occasional severity, &c., these are phenomena equally observed in the two cases of pregnancy and of uterine disease; and it is, in fact, impossible to consider the two cases apart. There *may* be one cause for vomiting and nausea in pregnancy, and another for the occurrence of the symptom in cases of uterine disease, but it is certainly reasonable to infer that the cause in the two is somewhat similar.

It will I believe be found that an attentive comparison of the phenomena witnessed in the two cases, and a close scrutiny of clinical facts, mutually throw a light, the one on the other.

Connection between Nausea and Vomiting and Disease of the Uterus.—For the last few years I have carefully and rigidly analysed the cases of uterine disease which have come before me, with the endeavour to establish definite relations between the symptoms and the alterations or lesions present. Sickness and nausea are so frequently attendant on uterine disease that this symptom necessarily comes very commonly under observation. The facts which have presented themselves have led me to establish a very close connection between nausea and sickness, and flexions of the uterus. This connection I have repeatedly observed; and, in fact, nausea and vomiting are rather common symptoms in cases of flexion of the non-impregnated uterus, though it by no means follows that every case of flexion will be attended with nausea and vomiting. Endeavouring to trace the connection between the flexion and the nausea or vomiting, I was led to the conclusion, from an analysis of the facts, that it was more likely to be observed in cases where the flexion led to retention of the secretions of the organ, as in dysmenorrhœa, when the menstrual blood does not readily escape, owing to the constriction at the seat of the bend of the uterus, and in certain other cases where the flexion was severe, independently of such evidence of retention of fluid in the uterus. Thus, severe flexion alone, or coupled with retention of fluid in the uterus, have seemed to me to be demonstrably and unmistakably the cause or essential accompaniment of the troublesome nausea and vomiting observed in the non-pregnant condition. The os and cervix uteri are not uncommonly under such circumstances turgid, congested, and otherwise somewhat changed. The fulness, congestion, or so-called inflammation of the os and cervix uteri has been noticed

in connection with obstinate vomiting by previous observers, and has been assumed to be the cause of the symptom. It will quite readily fall in with my view of the matter to accept this position, but my explanation goes beyond it, and is to the effect that the condition of congestion of the os is really secondary (in by far the majority of instances) to the more important lesion, the alteration in the shape (flexion) of the uterus (see pp. 32, *et seq.*).

Every case of flexion is not attended with nausea and vomiting, but in a considerable number of cases these symptoms are present, more or less marked in degree. The general rule on the subject is, that, in cases of anteflexion, the nausea or tendency to vomiting, are rather commonly observed. Also, it is found that aggravated cases of retroflexion afford the most aggravated instances of nausea and vomiting, though these extreme degrees of retroflexion are not necessarily, by any means, attended by such vomiting; it is, however, in a certain percentage of such cases that nausea and vomiting are most extreme. It is now two years ago since I first saw a lady, who was at that time suffering from aggravated nausea and vomiting. She had then been unable to take food of any description for over two weeks. Everything in the shape of food was instantly returned, and the eminent practitioner who had been in attendance upon her expressed to me his fears that she would actually perish from inanition. On examination, it was found that the patient was suffering from severe retroflexion of the uterus, which there was evidence to show was of long standing, and which had probably undergone acute aggravation within the previous few months. Nothing could be more distressing than the state to which this lady was reduced. Conjointly with treatment to restore the shape of the uterus, it was necessary to sustain life by the administration of doses of beef-tea by one teaspoonful at a time given very frequently, this being the utmost the patient could take for some time after I began to see her, although this particular symptom—the sickness—underwent a material improvement the moment proper local treatment was adopted. I have had much experience of this particular case since, and it has presented greater difficulties than I ever encountered before in regard to treatment. It has invariably happened, when the treatment has, for various reasons, been suspended or intermitted, and the instrument used in the treatment removed for a time, that the sickness has returned. I do not know anything which could more absolutely and positively prove the connection between the two things —the flexion of the uterus and the sickness—than the phenomena

witnessed in this one case. It is an extreme one, but I have met with many similar in which nausea and vomiting in a less degree have been found to be attendant upon anteflexion or retroflexion of the uterus. Without, therefore, drawing the generalisation that flexion is always to be found in cases of sickness and nausea, which would be manifestly absurd, seeing that it may be due to many other conditions besides flexion of the uterus, it is nevertheless a fact that if there is an indication of the presence of uterine disease, and if the patient is found to suffer from troublesome nausea and vomiting, the chances are that such a patient is affected with flexion of the uterus.

The Sickness of Pregnancy.—Latterly I have found myself extending a like explanation to the sickness of pregnancy, and have been led to the conclusion that the *sickness of pregnancy* is due to the combined effects of the increasing distension of the uterus and an associated flexion of the organ.

The proofs which I am able to submit in favour of the truth of the theory now propounded are various in character. Having had occasion to treat cases of sickness in young unmarried women suffering from flexion, it has been observed by me that when those patients marry and become pregnant, the sickness observed is liable to be unusually severe and troublesome. Another class of facts are those presented by patients whom I have been called upon to treat for the first time in consequence of the presence of severe sickness, with pregnancy, and whose condition previous to marriage I have had no means of actually knowing.

In these cases I have, since my attention was directed to the matter, always recognised an abnormal condition of the uterus as regards its shape. Lastly, regarding the cases which have come to me in the course of consultation practice, and where the symptoms of sickness have been still more troublesome, the same fact holds good, the connection between the two things have been observed to exist.

As an illustrative case I will cite the following, observed in consultation with Dr. Royston.

The lady, æt. 24, quite recently married, had menstruated last October 14th, 1870, a very slight discharge being observed on November 3rd. Since November 3rd there had been occasional sickness, and from the end of January up to February 21st, when I first saw her with Dr. Royston, the sickness had been severe. Dr. Royston informed me that the lady was pregnant, that when first called in to see her, about a fortnight prior to my seeing her,

the sickness was most severe and trying, and no article of food could be retained. On hearing Dr. Royston's account of the symptoms I expressed my opinion that the uterus was acutely anteflexed, that the fundus of the uterus would be found to be low down, jammed in the pelvis, and that this was the explanation of the symptoms. On proceeding to make an examination my opinion was found to be exactly verified, the os uteri lay far back, the roof of the vagina was projected downwards and backwards by the enlarged and anteverted and flexed uterus, and the body of the uterus was scarcely to be felt at all through the abdominal wall, although the pregnancy was probably of about four months' duration.

The patient had, in my opinion, suffered from anteflexion before marriage, and pregnancy having occurred the uterus had gone on growing and expanding without losing its vicious shape, and, indeed, with an increasing aggravation of that vicious shape up to the time of my seeing her.

The evidence that anteflexion existed prior to marriage is as follows:—The patient was never able to dance without discomfort. She had, six years prior to marriage, taken for six months violent horse exercise to which she was previously unaccustomed, and this was followed by losses similar to those of the menstrual periods, and by diarrhœa. On another occasion, a year later, horse exercise again taken brought on similar symptoms.

In this case the advice given was that the patient should remain altogether in the horizontal position in order to allow the expanding uterus a better chance of escaping from the pelvis, and that the bowels should be kept regularly open. The result of this treatment was that the chief symptom—the sickness—underwent a most material alleviation.

I mention this case because it is a typical one, but others equally illustrative might be given of anteflexion of the gravid uterus associated with marked, troublesome sickness.

I have also observed cases in which the occurrence of obstinate sickness has been connected with the presence of retroflexion of the gravid uterus; and further, that under such circumstances the sickness instantaneously disappears when the organ is restored by artificial means to its proper position. One of the most striking cases of this kind I have seen has occurred to me while these pages are going through the press, in the case of the wife of a medical man.

Anteflexion of the uterus is more commonly found to be the

cause of sickness in pregnancy than retroflexion, because it is comparatively rare for the retroflexed uterus to become impregnated. Hence the result, clinically, that when obstinate sickness occurs it is infinitely more likely to be due to anteflexion than to retroflexion of the gravid organ.

As bearing on the discussion of the present question it must be mentioned that until recently it was not generally known or understood that anteflexion of the uterus in the non-gravid state is a common affection, nor that anteflexion of the gravid uterus is common. In the various text-books on obstetrics anteversion of the gravid uterus is generally not even mentioned as a possible occurrence. This observation does not apply to some of the text-books published on the Continent. One of them, at all events, M. Cazeaux, alludes to it. I myself was not aware of the possibility of its occurrence until I encountered a case in actual practice, a case which I described at a meeting of the Obstetrical Society of London.* I believed it then, that is, seven years ago, to be a very rare disorder, but my observations since that time have convinced me that in a mild form it is very common, and further that it is, as I have already fully stated, in a more severe form associated with obstinate sickness. Looking back to my notes of this first case I find it recorded that obstinate sickness occurred in this instance, although I did not then attach any particular signification to the symptom.

If obstinate sickness in pregnancy is generally due to the existence of flexion it is natural to expect that the conjunction of the two events should have been noticed by previous observers. And, as stated by Dr. Barnes, in the discussion on this question at the Obstetrical Society, it has been recorded by some few observers that in certain cases of such obstinate sickness the gravid uterus has been found 'locked' in the pelvis. But these observers have none of them pointed out the generalisation for which, if true, certainly some merit may be claimed, viz., that all cases of obstinate sickness in pregnancy, or at all events a very large percentage of them, will be found associated with flexion. The reason why the generalisation has not been before arrived at appears to be that sickness has been considered so much a part and parcel of the condition of pregnancy that its occasional obstinacy has not been considered, except in very extreme cases, a matter deserving particular attention.

It by no means follows that all cases of flexion of the gravid

* *Obst. Trans.* vol. vii. p. 170.

uterus should be attended with sickness, for the mechanical conditions are not alike in all. For instance, in cases of retroflexion of the gravid uterus, if there be a considerable degree of *retroversion* without much actual bending of the uterine canal, the irritative effects would be expected to be less in degree.

My explanation of the vomiting of pregnancy is that it is due to the concurrent existence of flexion. It is believed by some uterine pathologists to be due to inflammation of the cervix uteri; by others, to undue distension of the uterine fibres. Substantially the latter opinion is probably correct, though it does not go far enough. What is it which produces this undue distension of the uterine fibres? Flexion of the uterus is precisely such a condition as would be likely to give rise to it, preventing as it does the normal expansion of one side of the uterus while the other side is subjected to unusual stretching.

It is quite possible that undue stretching of the fibres of the uterus may be the irritating condition, but it is more in conformity with actual experience to infer that the irritation proceeds from actual compression of the nervous structures. In the non-gravid state severe vomiting may be observed in cases where there is no distension of the uterine cavity going on.

On the whole, facts lead me to the conclusion that in cases of flexion it is the compression undergone by the uterine tissues (markedly by the nervous fibres) at the seat of the flexion which is the cause of the nausea and sickness, both in the gravid and in the non-gravid state.

In the non-gravid state the vomiting and nausea seem to be kept up by the compression of the uterine (nervous) tissues at the seat of the bend, that compression being a necessity of the continuance of the flexion, while in some cases it may be kept up by the pressure of hardened exudation material around the nervous filaments at the seat of the flexion.

In the foregoing observations cases of *obstinate* sickness during the gravid state have been chiefly alluded to. How far is the explanation given applicable to cases of the more ordinary kind where the sickness of pregnancy is less troublesome?

For the most part, it will be found that the phenomena observed adapt themselves to the explanation that the nausea and vomiting in ordinary cases is due to a temporary and slight flexion of the uterus. It is the fact, that the patient generally experiences the symptom in question on first rising in bed in the morning, or while dressing. Why is this? Is it not because the

body of the uterus falls a little downwards in obedience to the law of gravity, thereby producing a slight flexion and a compression of uterine tissues at the seat of the flexion? During the first three and a-half months such a temporary flexion is possible, because the uterus is still in the pelvis. Generally, after that time it rises out of the pelvis, and flexion to more than a very slight extent is no longer possible. Is it not the fact, that, for the most part, the liability to nausea and vomiting ceases at precisely this period? It is also a fact, which will be confirmed by all who make the experiment, that, in ordinary slight cases of nausea and vomiting, by ordering the patient to remain absolutely in the horizontal posture the symptom ceases.

I have not yet had an opportunity of examining cases of obstinate sickness in pregnancy after the fourth month. I am not sure how often sickness is noticed in this degree after that period of pregnancy; and I cannot, therefore, pronounce any opinion derived from actual observation as to the state of the uterus under such circumstances. Flexions of the uterus *do* persist under rare circumstances up to a late period of pregnancy. Dr. Oldham has recorded a case of delivery at full term in a patient the subject of retroflexed uterus, which is a case in point, though in Dr. Oldham's case there is no mention of sickness. As already stated, severe sickness is rare after the fourth month, by which time a miscarriage occurs, or the flexion which had existed becomes spontaneously cured, and troublesome symptoms of all kinds disappear. There are probably a small number of cases left in which the sickness persists, even when the flexion has been relieved, but on this point I await further information.

Nausea and Vomiting due to other Diseases of the Uterus.—I assume that it is a compression of the nervous tissues of the uterus which excites, in a reflex manner, the nausea and vomiting associated with disease of the uterus or with pregnancy, but it by no means follows that that compression shall be produced *exclusively* by the existence of flexion of the organ. It is certain that other conditions of the uterus may give rise to compression of the nervous tissues—presence of fibrous tumours, presence of exudative products, mere swelling and tumefactions of the uterine tissues, however produced. Probably, nay certainly, these last-mentioned causes also give rise to nausea and vomiting. It is quite rational, and in strict conformity with what I have already stated, to conclude that they may do so.

TREATMENT.

Congestion of the uterus combined with flexion being the most common condition of the uterus causing nausea and vomiting, as explained in the foregoing remarks, it is obvious that measures calculated to remove these pathological conditions are the ones most likely to be useful in removing the nausea and vomiting.

Over and over again I have observed these troublesome symptoms disappear at once on applying mechanical treatment for the restoration of the uterus to its proper shape, whereby the congestion and the irritating pressure on the uterine tissues are removed. Mere attention to the position of the body often suffices to relieve the patient. The horizontal position on the back in cases of anteflexion, the prone position in cases of retroflexion, unaided, give great relief, a relief which is more effectual if conjoined by suitable internal appliances for aiding the restoration of the uterus to its proper shape. (See Treatment of Flexions.)

In cases where the restoration of the uterus to its proper shape is delayed, or when the sickness arises from other alterations of the uterus, palliative measures are required. Above all the strength has to be sustained. In severe cases, where the stomach persistently rejects food, it is best at once to give up the idea of administering solid food of any kind. The patient should be made to suck small pieces of ice from time to time, and a teaspoonful of milk or milk-and-water should be swallowed every half hour, or more frequently, if possible. Minute quantities of brandy-and-water or champagne may be given every hour. Drugs given by the mouth, in really severe cases, appear to do more harm than good. An opiate liniment rubbed in over the epigastric region, or morphia applied endermically, has been found of great service. If the milk or other nutritive material, such as beef-tea, which may be tried, are rejected by the stomach, it is best to relinquish for a time the attempt to feed the patient by the mouth at all, and to have recourse to injections. A beef-tea enema with a few drops of laudanum may be given as often as may be judged necessary, the return to a more natural method of feeding being for a time postponed. Sedatives, antispasmodics or medicines of other kinds may or may not be indicated, according to the peculiarities of the case, but they will be best administered in these severe cases by the rectum.

In the less severe cases, where food is capable of being taken

by the stomach with more or less facility, and where the vomiting is only occasional, a carefully adjusted diet will still be the best means of giving the patient relief, and it will be a matter of experiment as to what kind of food suits best. Soda-water and milk are very generally borne by the stomach, but more substantial nourishment may be given, such as the case admits of. Pepsine —of which a reliable preparation is kept by Mr. Squire—is often very serviceable in cases where the digestive powers are much weakened.

Counter-irritation, by blisters to the epigastrium, have been strongly recommended, and I have myself used them with advantage. But since I have traced the connection between obstinate nausea and vomiting, and presence of flexions, I have rarely had occasion to use these or other palliative procedures, the removal of the flexion answering every purpose.

The nausea and vomiting present to an obstinate degree in *early pregnancy*, depending so frequently on anteflexion of the uterus, is treated best by maintenance of the horizontal position on the back, and by the use of the cradle pessary or air-ball pessary. Needless to say that when it is associated with retroflexion the uterus must be replaced and kept in position by a suitable ring pessary. I have treated several cases of severe sickness in pregnancy most successfully on these principles.

CHAPTER XVIII.

DEFECTIVE DEVELOPMENT OF THE UTERUS.—CONGENITAL MALFORMATIONS.

Diagnosis.

List of Cases.—Absence or Rudimentary Formations of the Uterus—Infantile Uterus—Uterus Unicornis—Double Uterus—Absence of Os Uteri.

Diagnosis.—The diagnosis of the various forms of irregularity of development of the uterus is important. Associated as these defects usually are with alterations or defects in the formation of the vagina, it is convenient to consider their diagnosis together. In the chapter on 'Diseases of the Vagina,' detailed directions for such investigation will be found.

The following is an abstract account of cases of congenital malformations of the uterus observed at University College Hospital in a period of about five years. That is to say, six such instances occurred out of about 1,200 cases. The absolute frequency of these malformations is of course not to be gathered from these statistics, as the conditions might have existed in other instances not examined. In private practice I have had occasion to investigate the uterus in about an equal number of cases where it was found deficient in regard to formation.

Table of Cases of Imperfect Development of Uterus.

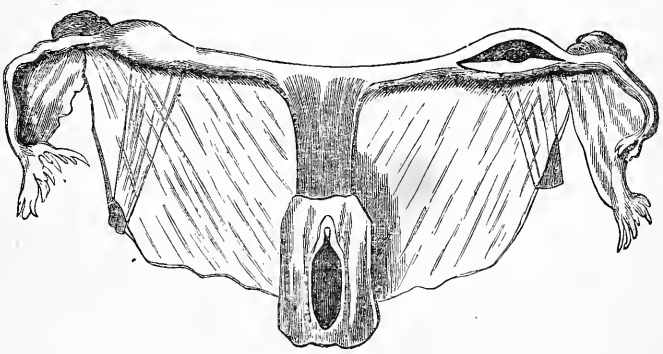
Age.	Initials.	Married or Single.	No. of Children.	Remarks.
18	L. J.	S.		A very slight show at æt. 15 for 1 day. Nothing since. Uterus small. Half an inch too short. Molimen slight.
21	E. J.	S.		No menstruation. Uterus measures 1 inch only in length.
22	E. H.	M.		No menstruation. Uterus a little shorter than normal. Has a sister in same state.
26	E. J. B.	M.	0	Married 2 years. Menstruation almost *nil*. A spot or two occasionally. Uterus appears to have a *double* cavity, but a single os.
28	Mrs. D.	M.	0	Married 4 years. No catamenia. Uterus only half an inch long.
30	M. W.	S		No menstruation. No evidence of action of ovaries. Uterus size of a pea. Vagina half natural length. Breasts undeveloped. Cords can be felt in situation of Fallopian tubes *per rectum*.

The following are the chief varieties of defective development of the uterus :—

ABSENCE OR RUDIMENTARY FORMATION OF THE UTERUS.

Cases of entire absence of the uterus are of extreme rarity, and there are good reasons for believing that when apparently absent the organ is yet represented by imperfect yet—to the anatomist—recognisable traces of a structure having the outline and general arrangement of the uterus. The ovaries—the essential portions of the female generative organs—are observed to be present in cases where the uterus is represented by mere traces of muscular fibres and cellular tissue only. A type of the condition here alluded to is a case recorded by Rokitansky,* in which the vagina

FIG. 87.



consisted of a fossa one inch long, the uterus represented by muscular fibres arranged in the form of the uterus, the Fallopian tubes more decidedly pronounced and presenting each a small cavity, the ovaries present (fig. 87).

The particular part of the uterus formed may be limited chiefly to the cervix, to the upper part, or to one side.

Absence or rudimentary formation of the uterus may be associated with complete absence of the vagina, or with rudimentary formation of this canal. With respect to the condition of the vagina in such cases, the following is an illustrative fact: I had occasion a few years since to examine a lady æt. 20, presenting the following

* See Kussmaul's valuable work, *Von dem Mangel, der Verkümmerung und Verdopplung der Gebärmutter*, Würzburg, 1859, p. 20.

conditions: pudendum covered with hair, labia majora well developed, vagina represented by a mere little pit admitting the uterine sound only half an inch, no uterus or hard body to be discovered between the bladder and rectum high up. Signs of ovarian activity had been observed on two or three occasions, giving reasons for the belief that the ovaries were present. The breasts were well developed.

INFANTILE UTERUS.

Under this term are included those cases in which the uterus is regularly formed and, so far, complete in its parts, but where it retains during adult age the size the uterus ordinarily possesses during early childhood, or prior to the advent of puberty. At the age when the arrival of puberty is generally witnessed, the growth of the uterus proceeds rapidly, the dimensions which it then acquires being those which, with certain exceptions, it retains until the end of what may be termed sexual life. But in a few instances, when the age of puberty arrives, the uterus fails to undergo the proper development, and retains its child-like size far beyond the customary period. In such cases menstruation does not usually occur, although the patient may present signs of ovarian functional activity. Various degrees of this defective development of the uterus are observed, all, however, associated with one symptom, viz. amenorrhœa or imperfect menstruation. In some instances the condition primarily at fault is congenital, while in others it appears to be connected with mal-nutrition at the critical period of the arrival of puberty.

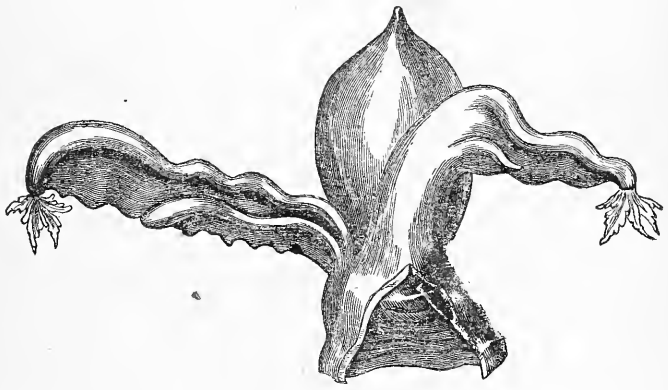
A sufficiently typical instance of the infantile uterus is that of a young woman who was under my care at University College Hospital. Her age was 22; she had never menstruated, the external generative organs and the breasts well developed, the uterus slender, two inches long as measured by the uterine sound, the vaginal portion of the cervix slight, the os uteri exceedingly small. This patient began to suffer from symptoms indicative of ovarian activity at the age of sixteen, but menstruation had never actually occurred. Several cases of infantile uterus will be found recorded in Kussmaul's work. Very numerous variations are met with. Thus the body of the uterus may be imperforate, or the uterus may have two cornua instead of being a single organ, or the imperfect development may only exist as regards the cervical portion.

Further, the history of certain recorded cases renders it evident that the infantile uterus may undergo at a very late period the ordinary development, and also that, although in by far the majority of cases the subjects of this condition are destitute of the power of conception, yet that the contrary may be observed. The breasts are generally small; the external generative organs, the labia, clitoris, and vagina, also smaller than usual; the pudendum is, as a rule, imperfectly covered with hair. The individual, as a rule, is stunted as regards size and development of the body generally, but by no means always so. The ovaries have been found quite absent, but this is generally not the case; the ovaries also contain Graafian follicles, and the menstrual molimina are more or less well marked, although the menstrual discharge is almost always entirely absent. Sexual desire is frequently, but not always, found wanting.*

UTERUS UNICORNIS.

Under this term are included those cases in which the uterus presents a division superiorly into two parts or cornua, one of

Fig. 88.*



which is more developed and larger than the other. There are several varieties in reference to the relative size of the two cornua in different cases, and obviously when the two cornua are nearly alike in point of size the term 'unicornis' is not applicable. In Kussmaul's celebrated work all these variations will be found described together, with various exceedingly interesting facts

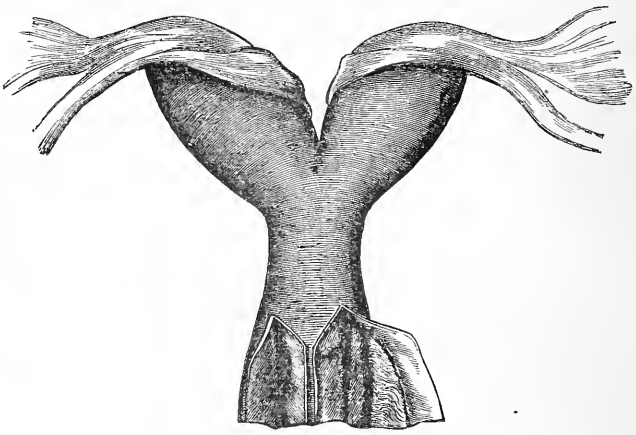
* Kussmaul, *op. cit.* p. 94.

relative to the history of pregnancy under these unusual circumstances. The second cornu is always present although it may be exceedingly small. A typical case of the uterus unicornis is that recorded by Pole.* (See fig. 88. The uterus is here seen from behind.)

DOUBLE UTERUS.

The several varieties of the double or bipartite uterus are, as is the case in other instances of malformation, traceable to arrest of

FIG. 89.



development in early fœtal life, and with reference to all of them it may be said that they represent what is a normal and persistent condition of the uterus in inferior orders of mammalia.

A most complete separation of the two parts of the uterus is sometimes witnessed, each side representing a separate cavity opening below by a separate orifice into a distinct and separate vagina, each vagina presenting externally a distinct orifice. This condition is very rare.

The next variety—the uterus duplex bicornis—is well illustrated by a case recorded by Schroeder† (see fig. 89). The two halves of the uterus are here—externally—connected, but the two cavities are completely distinct.

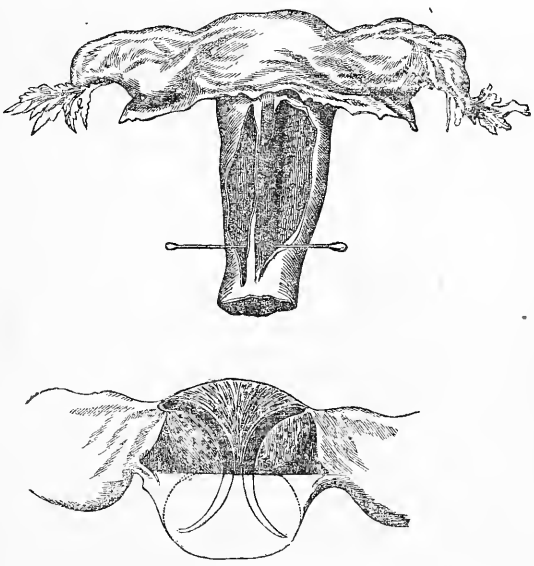
* *Memoirs of Med. Soc. of Lond.* 1794, p. 507, and Kussmaul, *op. cit.* p. 22.

† From Kussmaul. p. 25. In the same work, p. 197, will be found a drawing from a case of Carus, in which one uterus is occupied by a fœtus.

Here it may be stated that the division between the proper cavity of the uterus and the Fallopian tube is always decided by the position of the round ligament. Unless this be attended to, there would be a liability of confounding the uterus bicornis with the more completely and distinctly double uterus.

Following Kussmaul's arrangement, another variety is that in which the uterus appears externally of the normal form, the cavity being, however, completely divided into two by a septum running down the middle. This Kussmaul terms the 'uterus duplex omnino conjunctus vel u. septus.' Rokitansky's 'uterus bilocularis' (fig. 90) is from a case of Liepmann's,* and was taken from

Fig. 90.



a girl æt. 19. The vagina was in this case double, as also the uterus, although there is no indication of this externally. The vaginal canals are laid open from behind.

There are yet some further modifications. Thus, the septum between the two sides of the uterus may only extend half-way down the uterus, in which case there is only one os uteri, while the cavity superiorly is double ('uterus subseptus'), or again the uterus may be single at the cervix, and completely double above that point, constituting the 'uterus bicornis unicollis.' Instances of these two varieties are given by Kussmaul.

* See Kussmaul, *op. cit.* p. 26.

Lastly, a case of Eisenmann's may be referred to which stands, as Kussmaul remarks, midway between the uterus bicornis and the uterus septus: here the uterus is distinctly double, as also the vagina, the two uteri are quite parallel, and the two cavities long and narrow. A groove marks externally the division between them.

Some remarks on the *treatment* of cases of imperfect development of the uterus will be found in the chapter on Amenorrhœa.

ABSENCE OF ORIFICE OF OS UTERI.

This is another congenital malformation which is met with but very rarely. The aperture at the lower extremity of the cervix uteri (os uteri externum) may be absent, or the canal may be imperforate higher up. In either case there may occur an accumulation of menstrual fluid when puberty arrives. This condition may be associated or not with an imperforate vagina or with absence of the latter canal.

CHAPTER XIX.

ATROPHY, AND HYPERTROPHY OF THE UTERUS.

Atrophy of the Uterus; The result of Sexual Involution—Premature Senile Atrophy or 'Super-involution' of the Uterus—Mechanical Atrophy.
Hypertrophy of the Uterus—Result often of Defective Involution after Delivery—Hypertrophy, with Elongation of the Cervix.
Treatment of Hypertrophy of the Uterus.

ATROPHY OF THE UTERUS.

Atrophy of the uterus, in the true sense of the word, implies not a congenital defect as regards size, but an *acquired* smallness.

Atrophy of the uterus occurs at the period of sexual involution; the organ ceases then to exercise the ordinary function, menstruation and the capability of impregnation coming to an end. The walls of the uterus become under these circumstances thin, and the whole organ smaller than before. These changes are attended with the further consequence that the uterus is less vascular and less sensitive than before. The organ has ceased to play its part, and its condition functionally very much resembles that present antecedently to the arrival of puberty. Morbid processes affecting the tissues of the uterus are not unfrequently arrested by the occurrence of this, which may be termed its natural atrophy. But it appears that the uterus may undergo this senile change at an unnaturally early age, thus constituting a condition which Chiari* described as 'premature senile atrophy.' Sir J. Y. Simpson† ascribed this to 'super-involution' after delivery—a questionable theory.

Premature atrophy of the uterus might be expected to be found in women who have prematurely ceased to menstruate, but its occurrence in association with still persisting ovarian activity is, as would be expected, extremely rare.

The uterus affected with atrophy of the character alluded to is universally small, the cervix participates in the change, the vaginal

* *Klinik der Geburtsk.* 1855, p. 371.
† 'Clinical Lecture on Amenorrhœa.' *Med. Times and Gaz.* 1861.

portion becomes shorter, and the os uteri smaller. The tissues of the organ become somewhat harder.

Atrophy of the uterus of another kind may be produced by the operation of external influences. Thus, when the organ is pressed upon by tumours in the neighbourhood, the walls may become very thin. I have found the organ excessively small from this reason in some cases of ovarian tumour and of fibroid tumour.

Local atrophy occurs in cases of flexions of the uterus, the walls becoming in many cases very much diminished in thickness at the part which is the seat of the flexion. (See chapter on 'Flexions.')

Another kind of atrophy is that accompanied with excessive dilatation of the uterine cavity, such as now and then occurs from fluid or gaseous distension of the organ. The uterine walls may be found in such cases excessively thin. The form of atrophy here alluded to has been described as 'excentric atrophy' of the uterus.

Table of Cases of Hypertrophy of Uterus (chiefly of Cervix Uteri).

The following Cases out of the Series (1,205) *observed at University College Hospital were instances of Hypertrophy of the Uterus; the Affection was more generally limited to the Cervix Uteri in these instances.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
(?)	J. F.	M.	3	Hypertrophy of cervix uteri. Operation, amputation of vaginal portion of cervix.
(?)	A. O.	M.	0	Hypertrophy of cervix uteri. Cyst of vagina also. Married 7 years.
29	M. D.	M.		Hypertrophy from defective involution.
29	Mrs. C.	M.	2	General hypertrophy. Uterus 1 inch too long. Last child 1½ year ago.
30	W.	M.	1	Hypertrophy of anterior lip of os uteri. Operation.
33	W.	M.	3	Great hypertrophy of cervix. Nature doubtful.
34	A. I.	M.	2	Hypertrophy of cervix and prolapsus. Operation. (Also an ovarian tumour.)
38	H. M.	M.	8	Hypertrophy of uterus.
41	Mrs. F.	M.		A large hypertrophied anteverted uterus.
41	A. D.	M.		(?)
41	M. D.	M.	3	Great hypertrophy of cervix uteri transversely.
41	S. K.	M.	6	Hypertrophy and hardness of the vaginal portion of cervix. Lividity of its surface.
41	L. A.	M.	2	Hypertrophy of both lips of cervix uteri, posterior lip especially.
43	Mrs. T.	M.	12	Enormous increase in size of cavity of cervix. (Last confinement, of triplets.)
43	A. G.	M.	8	Cervix generally hypertrophied.
46	Mrs. D.	M.	7	Nodular hypertrophy of cervix and os uteri. Pruritus.
46	M. S.	M.		Hypertrophy of posterior lip of os.
54	E. G.	M.	10	Hypertrophy of posterior lip.

Like many other organs of the body, the uterus is liable to variations in size. This variation is, however—in individuals in a state of health—limited. During the catamenial period, the organ becomes enlarged, but this enlargement is normally only temporary, and a general and persistent addition to its bulk only occurs under abnormal circumstances. The very considerable growth which the uterus undergoes during the period of gestation is of course an exception to this statement.

The simplest form of hypertrophy of the uterus is that witnessed in cases where the uterus is, and has been, influenced by pregnancy or by the presence of a tumour or tumours within its walls. Hypertrophy of the uterus, in this limited sense of the word, is never considerable; my own experience would lead me to say that the uterus may become under such circumstances perhaps twice as large as usual, but this degree of hypertrophy is rarely witnessed. This subject has been more fully considered elsewhere (p. 36) in connection with the subject of chronic congestion of the uterus, with which condition this simple hypertrophy is generally associated. Here the enlargement affects the body and the cervix of the uterus pretty equally.

The most common, and indeed the most marked form of hypertrophy of the uterus is witnessed in women who have been pregnant. The uterus immediately after having expelled the fœtus at full term, or at an earlier period of gestation, has a bulk very greatly exceeding that of the unimpregnated organ. Under ordinary circumstances it regains—very nearly at least—its former size. When this 'involution' does not occur regularly and promptly, the organ is liable to become affected with hypertrophy of a persistent character. Even in these cases, however, the degree of hypertrophy witnessed, if there be no other cause in operation, is not very great. In hypertrophy of the uterus due simply to 'defective involution' after deliveries, abortions, &c, the increased length of the organ does not, I believe, ever exceed one inch. (It is necessary to observe that this does not apply to any measurement taken within the first two or three weeks after the labour or miscarriage.) One inch increased length usually implies, however, considerable addition to the general bulk of the organ, and entails various inconveniences which have been already particularly described. Hypertrophy, the result of chronic inflammation and defective involution, one or both, is most palpably evident in the cervical region, as this can be easily reached and inspected, but it is rarely limited to this portion.

Hypertrophy of the uterus is especially liable to occur in association with growth of fibroid tumours within the walls of the organ. A fibroid tumour of the uterus, growing in the middle of the thickness of the wall, not unfrequently produces great hypertrophy of the uterus, for the uterus may expand and grow not merely

Fig. 91.*

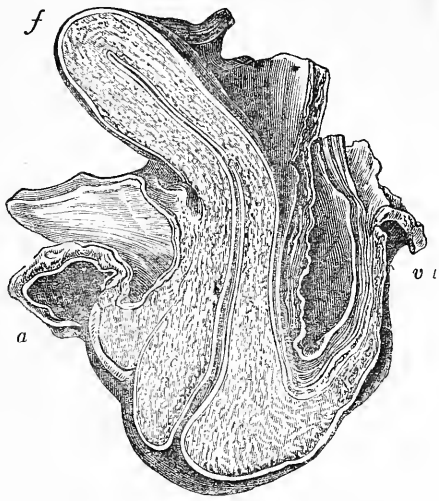
around the tumour, but in every other part also. The bulk of the uterus may, under such circumstances, equal that of a child's head, but the greater part of the bulk would then be made up of the tumour. In cases of fibrous polypus of the uterus, the organ grows sometimes to a very large size, but in such cases the uterine walls have less thickness. Hypertrophy of the uterus to a slighter degree is witnessed when fibroid tumours grow from its outer surface. Again, it is not rare to meet with enormous fibroid tumours growing from the external surface of a uterus, itself even smaller than usual.

* Fig. 91 represents a case of general hypertrophy of the uterus in a patient affected with menorrhagia. Amputation of the vaginal portion of the cervix was performed in this case.

Partial hypertrophy of the vaginal portion is sometimes observed.

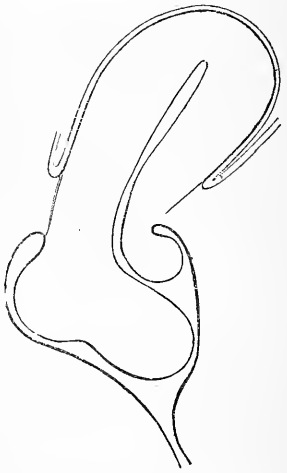
Hypertrophy with elongation.—The uterus not unfrequently

Fig. 92.*



undergoes, in consequence of pressure, or in consequence of traction in a particular direction, an elongation to which the term hypertrophy has not always been very correctly applied. This elongation more particularly affects the cervical portion of the organ, not simply that part which projects into the vagina, but the cervix properly so called. Hypertrophic elongation of the cervix constitutes one of the forms of prolapsus of the uterus (see 'Prolapsus'), but it is also sometimes witnessed when an ovarian tumour pushes the body of the uterus upwards, and thus elongates the cervix. In such cases the walls of the canal do not usually grow, and the effect of the traction is thus to render them actually thinner. The cervix of

Fig. 93.†



* Fig. 92 (from Farre) represents longitudinal hypertrophy of the cervix, of a marked character. Other illustrations will be found in the Chapter on 'Prolapsus.'

† Fig. 93 represents hypertrophy of the posterior lip of the os, of non-malignant character.

the uterus may, under such circumstances, become three, four, or five inches in length. The lower portion of the cervix—i.e. the vaginal portion—sometimes, however, undergoes a true hypertrophy, the result of which is that a conical or snout-like substance of considerable size is then found occupying the vagina, nay, even projecting beyond the ostium vaginæ. A more limited hypertrophy is depicted in fig. 93.

TREATMENT OF HYPERTROPHY OF THE UTERUS.

When associated with chronic congestion of the organ, the treatment should be directed to the removal of that condition (see p. 45). When the hypertrophy affects the organ universally, constitutional measures are most indicated. When the hypertrophy is of secondary character, the treatment should be directed to the removal of the primary evil. When, however, the hypertrophy is limited to the cervical region, as is not unfrequently the case, surgical interference is not uncommonly very necessary. The best means of performing the operations required in such cases have been considered in the chapter on prolapsus of the uterus. In cases where the affection is limited to the cervix, and amputation cannot be performed, the frequent application of cold by means of injections, and these alternately with styptics, such as the tincture of iodine, are of great service. But the patient must be kept at rest, or the treatment is of comparatively little service.

The various local applications available for the purpose of producing hypertrophy of the os uteri have been already described (see p. 52).

CHAPTER XX.

NON-SANGUINEOUS DISCHARGES FROM THE GENERATIVE ORGANS, LEUCORRHŒA, ETC.

Normal Secretions of the Generative Passages.
Watery Discharges—Mucous and Puriform Discharges—Sanious and Offensive Discharges—Their various Physical Characters and Causes.
Syphilitic and Gonorrhœal Discharges.
Causes of Non-Sanguineous Discharges.—Constitutional, Local, and Specific.
Treatment.—General Treatment—Removal of the Cause—Resort to Watering Places—Baths—Injections—Internal Remedies.

Before entering on the discussion of the varieties and causes of the discharges from the female generative organs of a non-sanguineous character, and to which the general term 'leucorrhœa' is for the most part applied, it will be well to describe

THE NORMAL SECRETIONS OF THE GENERATIVE PASSAGES.

In a state of health there is poured out from the mucous membrane of the vagina, from the sebaceous and muciparous glands at the orifice of the vagina, from the vulvo-vaginal glands situated one at each side just within the orifice of the vagina, from the cervix uteri, from the whole of the mucous tract extending from the ostium vaginæ to the termination of the Fallopian tubes, a secretion sufficient to lubricate the opposed surfaces of the mucous membrane. This secretion is liable to be physiologically increased in quantity, as during congress, and under other circumstances, and it is liable at any moment also to be increased in quantity pathologically, giving rise in the latter case to fluid or other discharges.

Here it is necessary in the first place to give a brief statement as to the nature and physical properties of the healthy secretions of the generative passages. Dr. Beigel's account of the nature and variations in the secretions of the generative passages may here be referred to as containing an admirable exposition of this

subject,* which has also, from time to time, engaged the attention of several other distinguished observers.

At the orifice of the vagina, we have *sebaceous follicles* scattered over the nymphæ, clitoris, and inner surface of the labia, the secretion of which contains butyric acid, and has a strong and somewhat ammoniacal odour (A. Farre). Around and at the sides of the vaginal aperture there are many *muciparous follicles* which secrete viscid mucus. Further, we have the vulvo-vaginal glands, which secrete a viscid fluid with a neutral reaction (Beigel), resembling somewhat the prostatic fluid, and having a peculiar odour. The secretions of these glands at the vaginal orifice are liable to considerable increase during venereal excitement.

Regarding the *vaginal mucous membrane*, it may be stated that it secretes a fluid, at first transparent, acid, and mixed with large quantities of epithelial *débris*. This secretion usually appears at the outlet as a whitish or milky-looking secretion. Sir C. M. Clarke considered this appearance due to the entanglement of air, just as the saliva forms a whitish accumulation at the corners of the mouth in individuals speaking rapidly. The more decidedly *curdled* aspect of this secretion occasionally observed appears to depend on the albumen being precipitated by the acid of the secretion. In the vaginal mucus Donné found, on examination by the microscope, a number of *trichomonata*, which are oval, shaped like a pear or biscuit, and are from six lines to an inch and four lines long. Respecting these animalcules, however, Scanzoni makes the remark that their presence is connected with a certain alteration of the product of the vaginal secretion, and that they do not develope much except in a mucus incontestably of pathological nature. Beigel has also failed in finding them.

The mucous secretion of the *uterine cervical cavity* is of a very different character altogether. The glands of the uterine cervix, first accurately and thoroughly described by Dr. Tyler Smith,† are exceedingly numerous, and the apparatus there situated is, when in a state of activity, capable of producing an enormous amount of secretion. Hence the extreme importance of this part of the generative passages in all considerations having reference to the etiology and nature of leucorrhœa.

* 'Researches on the Secretions in Fluor Albus.' By Dr. Beigel. *Deutsche Klin.* 1855, p. 205.

† See his elaborate and original work, *On the Pathology and Treatment of Leucorrhœa.* London: Churchill. 1855.

The secretion of the glands of the cervix uteri is not acid but alkaline. It is, when seen issuing from the crypts of the mucous membrane, transparent, somewhat resembling the mucous secretions of the nasal passages, or white of egg, in appearance, but very tenacious and viscid; it contains many mucous corpuscles, and epithelium of the columnar variety is mixed up with it. The characters, as here described, are lost in the discharge as usually witnessed, after it has passed down the vaginal canal and become mixed with the secretions of the latter surface. The effect of the admixture of the secretions from the cervix and the vagina is that a white, soapy or creamy fluid results. It now and then happens, however, that the cervical secretion escapes from the vagina in the form of masses of coagulated albumen. Ordinarily, and when the parts are in a condition of health, the secretion from the cervix is not probably considerable in quantity. The mucus lubricating the vaginal passages during labour proceeds chiefly from the cervix uteri.

The natural secretions of the *internal membrane of the body of the uterus* during the inter-menstrual periods, are, in a state of health, and when the uterine functions are carried on properly, probably very small in amount, and the fluid there poured out is a colourless mucus. But when the cavity of the uterus is increased in size, the area of secreting surface is necessarily much extended, and important results follow, as will be hereafter explained when we come to consider the causes of leucorrhœa.

Lastly, respecting these secretions in a state of health, it must be stated that usually they are only sufficient in quantity to lubricate the parts; but there are not a few instances in which the secretions are much more profuse, and yet without entitling the case to be considered altogether pathological. In some cases, the increase in quantity is purely physiological.

DIAGNOSIS.

The diagnosis of the nature and causes of the various kinds of discharges from the generative organs is a matter of the greatest possible importance; and not rarely one of some difficulty.

It is necessary, in attempting to arrive at the diagnosis of the cause, to consider the attendant circumstances. If the discharge be trifling in amount, and there be no particular disturbance of the general health, a minute investigation of the case, to the extent at least of actual manual or other examination, seems

hardly necessary. Particular cases, however, unquestionably require particular decisions as to this point. Some cases require rather care in the investigation of the general facts and attendant circumstances; others demand more imperatively careful manual or visual examination.

The questions we have to determine in a given case are—1. What is the source of the discharge? and 2. What is its cause?

The data with which we must be put in possession, in order to answer these questions, relate to—

a. The physical qualities of the discharge itself.

b. The circumstances attending or preceding its appearance.

c. The physical condition of the parts, the uterus, vagina, &c., from which the discharge may or does proceed.

The more prominent physical characteristics of the various discharges to which we have now to direct attention have been made the basis of a rough sort of classification. Thus, there are *watery* discharges, *mucous* discharges, *muco-puriform*, and *purulent* discharges. Then, we have discharges which occasionally assume a *sanious* character, in which there is an evident admixture of blood-elements. *Offensive* discharges also form a class the differential diagnosis of which may be usefully pointed out.

It will be convenient to discuss these *seriatim*.

Watery Discharges.—Discharges from the vagina of a serous or watery character, more or less profuse in quantity, form a class which may be conveniently separated from the other varieties.

Pregnant women are sometimes the subjects of a discharge of a watery nature, the origin of which is open to some doubt. The fluid may escape gradually, and the flow may be persistent for a longer or shorter time; or the quantity may be greater, but the duration of the same less. The discharge of a watery fluid may go on for some time, extending at intervals over a considerable portion of pregnancy, and it is not necessarily destructive to the life of the fœtus, which may yet be born at the full time, and healthy. If the discharge of the fluid be accompanied by pains like those of labour, the supervention of a miscarriage is to be feared. In a case of watery discharge from this cause, the abdomen would be large, the uterus increased in size, and the signs of pregnancy would be present. The watery discharge, if in quantity, would have the effect of reducing the size of the uterine tumour. In some cases the discharge comes certainly from the amnion.

There is another class of cases in which a watery discharge

occurs from time to time, *i.e.* in cases where the uterus is occupied by the *hydatidiform* or *vesicular mole*—'hydatid pregnancy,' as it was formerly called. Patients believed to be pregnant increase too rapidly in size, fœtal movements are not felt, the mammary symptoms are in abeyance, the whole aspect of the case being irregular, so to speak, and yet there are strong reasons for believing the woman originally to have been pregnant. After a time, slight losses of blood may occur, and slight but repeated discharges of watery fluid, which are generally accompanied by labour-like pains; or discharge of watery fluid alone is observed. The cause of the discharge is rupture of the cyst-like vesicles composing the chief part of the degenerated contents of the uterus; partly perhaps also to expulsion from time to time of amnionic fluid. Respecting the appearances presented by the hydatidiform bodies themselves, which may be expelled together with the watery fluid, see p. 350.

Another cause of watery serous discharges from the vagina is found in the presence of that peculiar growth first described by Dr. Clarke under the name *cauliflower excrescence*, but which is now known as epithelial cancer or epithelioma. The fluid discharged in such cases is described in the work of Sir C. M. Clarke as 'little more than a clear watery fluid; blood, however, is sometimes mixed with it, or perhaps comes away alone in large quantities.'* The quantity of fluid discharged is sometimes enormous. Dr. Ramsbotham records a case in which twenty dozen napkins were used in a week. Safford Lee describes the discharge as brownish, like coloured saliva, and this description is very accurate. The symptoms of pregnancy are not, unless by a rare coincidence, present in such cases.

The presence of *polypi* within the uterus is occasionally the cause of a very profuse watery discharge. This fact has not been sufficiently dwelt upon by previous writers. I have observed this symptom to be present in a marked degree in several instances.† Here discharges of a watery nature are observed alternately with sanguineous discharges, and profuse menstruation, together with other signs of polypus, is present. The more usual form of discharge attendant on uterine polypi is not, however, that now under consideration. Such watery discharges are occasionally the sole symptom present in cases of polypus of the uterus.

* Vol. i. p. 34.

† See cases by Dr. Elkington, illustrative of this fact, in *Obstetrical Transactions*, vol. i.

In a most interesting case related by Sir J. Y. Simpson,* an abundant serous, and sometimes offensive, discharge, which had existed for some time, was found to be due to the presence of a *fungous cancerous growth* within the uterine cavity. This is a form of disease of great rarity.

Tubercle of the Uterus.—In this rare disease a continuous profuse watery discharge, of a dirty yellow or pale brown colour extending over a considerable period, may be noticed.

Sometimes an *ovarian cyst* becomes adherent to one of the Fallopian tubes, or, at all events, in some way becomes connected with it; the contents of the ovarian cyst pass into the Fallopian tube, thence into the uterus, and flow away gradually from the vagina. The signs present in such a case would be:—previous existence of a tumour situated in the hypogastrium, or more or less to one side, subsidence of the same, an occurrence of simultaneous watery or serous discharge from the vagina. This mode of termination of an ovarian cyst is rare; Dr. West only noticed it in one out of sixty-eight cases. I have observed the fact in two instances.

Watery Discharge following Parturition.—In Dr. Ashwell's work† will be found related particulars of five cases in which a profuse watery discharge, coming away in gushes, was noticed some days after labour. In only one of the cases was opportunity afforded of ascertaining post mortem the condition of the uterus: in that case, 'three elevated masses, having a fungoid and melanotic appearance,' were found growing inwards from the uterine wall. Such cases are rare.

Sir C. M. Clarke refers to another cause of watery discharges from the vagina, the '*oozing excrescence of the labia*,' probably identical with what would be now termed chronic eczematous affection of the skin covering the parts in question, associated with a chronic inflammatory condition of the tissues beneath.

Lastly, it is just within the limits of possibility that the watery discharge present may be really an *involuntary escape of the urine* from the bladder, either caused by paralysis of the muscles surrounding the urethra, or due to vesico-vaginal fistula. The urinary odour present in such cases would almost certainly discover the nature of the case.

* *Med. Times and Gazette*, Jan. 15, 1859. † *On Diseases of Women*, p. 507.

MUCOUS AND PURIFORM DISCHARGES.

The cases in which discharges having this character are observed form that large class of cases to which the term 'leucorrhœa' is more usually applied. This group of cases differs from those just considered, not only in the physical characters of the discharge, but in regard to the manner of its appearance. Here the discharge is more or less completely continuous. The discharges now under discussion have this in common, that they are more or less opaque. The colour varies exceedingly; it may be whitish, decidedly yellow, yellowish-green, or of any intermediate shade. The consistence of the discharge also varies; it may be viscid, gelatinous, of the consistence of cream, or quite fluid.

Most cases of 'leucorrhœa' are of a composite nature; that is to say, the discharge observed at the vaginal orifice proceeds from more than one source, and results from the mixing of secretions from the cervical mucous membrane, from the mucous membrane lining the vagina, and, in certain cases, also from the interior of the body of the uterus itself.

In most cases, there is a preponderance of secretion from one or other of the sources indicated. The difference in the source of the discharge has been made the basis of a division of cases of leucorrhœa into 'uterine' and 'vaginal;' the former including cases in which the discharge proceeds chiefly from the uterus (the cavity of the cervix), and the latter including those cases in which the discharge has a vaginal origin.

Certain general deductions may be drawn from the character of the discharge as to the origin of the same. They may be stated as follows:—

If the discharge consist of a curdy-looking fluid, of an acid reaction, and containing in suspension tessellated epithelium *débris* in quantity, it more generally happens that it proceeds from the mucous membrane of the vagina.

If the discharge consist of a soapy-looking matter, or of vitreous lumps of coagulated mucus, or of viscid tenacious mucus, the origin of the same is the cervix uteri. It is only in cases where the cervical glands are in a very active condition that products of this kind are seen externally in any considerable quantity.

If the discharge be of a creamy character, tolerably profuse, and constant, it proceeds from the cervix uteri, or, as I have found in

a considerable number of instances, from the cavity of the body of the uterus. But the secretion of the cervix alone is, or may be, rendered puriform by admixture with the vaginal secretions.

It is thus evident that, from the physical characters of the discharge alone, we cannot obtain in all cases positive information as to the precise spot from which it is poured out. Where circumstances render it necessary that more exact information be obtained an examination must be resorted to.

PURULENT DISCHARGES.

There are two important distinctions to be made in reference to this class of discharges. Thus, those cases in which the discharge is *continuous* belong to one category; those in which the discharge is *non-continuous*, taking place for a certain time only, and recurring after a shorter or longer interval, belong to another.

a. When the purulent discharge is *continuous*, the origin of the discharge is probably the vaginal mucous membrane, the uterine cervical glands, the surface of a cancerous or other ulcer, suppuration of retained membranes or placenta after abortion, &c. An important class of cases, in which there is continuous discharge, are those in which the purulent discharge is the result of *gonorrhœal* infection. The diagnosis of gonorrhœa from other forms of purulent leucorrhœa will be considered further on.

b. Non-continuous Purulent Discharge.—In the other class of cases—those in which there is a purulent discharge only la. ting for a time, ceasing, and then recurring—the source of the discharge is either the uterine cavity itself, or an abscess situated near the vagina, and opening into that canal. Purulent discharges, whether continuous or non-continuous, far more often than has been supposed, proceed from the cavity of the body of the uterus; and we have positive evidence of this origin in cases where, either from contraction of the uterine canal at the junction of the body and cervix (produced by senile atrophy, flexion of the uterus, &c.), an accumulation takes place within the body of the uterus, and in which the symptom we are now considering—occasional and abrupt discharge of purulent fluid from the generative passages—is observed. Sir C. M. Clarke and Dr. Ashwell both allude to a form of purulent discharge produced, as they describe, by formation and retention of pus in the uterine cavity, the pus so formed escaping from time to time in the manner just

described. In a case of Dr. Ashwell's, the purulent fluid exyelled amounted to nearly half a pint on two or three occasions. I have observed many precisely similar cases, though the quantity so expelled has not been so great as this. Profuse discharge of pus from suppuration of a polypus of the uterus has been noticed (Safford Lee). Dr. Matthews Duncan* has more recently called attention to such an occurrence, particularly in the case of old women who have ceased to menstruate. In a woman who is still menstruating, the symptoms are, dysmenorrhœa, a peculiar feeling of tightness round the loins, sickness or vomiting, &c.; these symptoms finding sudden relief in the discharge of a certain quantity of purulent fluid. If menstruation have ceased, the symptoms slightly vary. Flexions of the uterus in women who have borne children are very frequently indeed, according to my experience, attended with accumulation and periodic expulsion of a purulent fluid from the uterine cavity. I lay the more stress upon this fact as it is one which has not yet seized hold on professional appreciation.

One of the most important causes of this occasional purulent discharge is *pelvic abscess*. The abscess may follow after, or be the result of, parturition; in which case, the other signs present would lead to a suspicion as to the origin of the purulent discharge in question. Another highly interesting class of cases is that in which an abscess, the result of suppuration of the contents of the cyst of a peri-uterine hæmatocele, discharges its contents into the vagina. In both classes of cases, however, the discharge appears suddenly, and they markedly differ in this respect from ordinary cases of purulent leucorrhœa.

SANIOUS DISCHARGES.

These evidently contain a certain admixture of blood-elements. In women the subjects of profuse menstruation, as the discharge of blood is becoming less, there is generally to be observed a period when there is a sanious discharge. Where an hypertrophied (so-called ulcerated) condition of the villi lining the cervix is present, slight bleeding readily occurs. Sanious discharges are not unfrequently found to be due to the presence of morbid growths within, or organic disease of, the uterus; fungoid condition of the uterine mucous lining, malignant ulceration of the os uteri, &c.; and we find, combined, leucorrhœa and very

* *Edinburgh Medical Journal*, March, 1860.

slight but continuous hæmorrhage. In polypus of the uterus, such sanious discharge, alternating with hæmorrhages or with colourless leucorrhœal discharge, is observed. Whatever, in fact, is capable of giving rise to hæmorrhage may occasion discharge of a sanious character. In cases of pelvic hæmatocele, where an opening has formed between the cyst and the vagina, and the contents are in process of evacuation, there will be a sanious discharge. The presence of a more or less continuous sanious discharge is a condition of things requiring a careful digital examination.

OFFENSIVE DISCHARGE.

This quality of the discharge is important in reference to the determination of the disease present in certain cases. Discharges of an offensive character have been usually considered as absolutely indicative of the existence of *cancer*. It is true that, in almost all cases of cancer of the uterus, there is to be remarked a particularly offensive odour of the discharge proceeding from the vagina; but it is also true that it may be absent. The smell of cancerous discharge has a peculiar fœtor: so peculiar that it can hardly be mistaken for anything else, according to some authorities. It is certain, however, that the peculiarity is not equally appreciable by different observers; the absence of a peculiarly fœtid odour, or indeed the absence of fœtor of any kind, does not shut out the possibility of the presence of cancer. This fact cannot be too much insisted on, for there are records of cases in which disastrous results have followed the belief on the part of the practitioner that cancer of the uterus was necessarily associated with presence of a fœtid discharge. The later the stage of the cancerous discharge the more constant is the fœtor, the ulcerative process appearing to be generally associated with it. It must not be forgotten that there may be fœtor in any of the diseases of the uterine organs in which hæmorrhage is present, if cleanliness be not observed; clots of blood retained and decomposing are especially liable to give rise to it. The presence of a dirty brownish or bloody-looking discharge in a patient previously the subject of hæmorrhages, and within the 'cancerous' age, would make us suspicious of the existence of cancer; add to this the offensive character of the discharge, as just described, the suspicion would be still stronger. The actual decision could not, however, be arrived at without a physical examination.

Another cause of offensive discharge from the vagina is the *presence of a dead ovum or portions of the fœtal membranes, &c., in the uterus.* It is more generally connected with retention of the whole or portions of the *placenta.* The previous existence of pregnancy and the occurrence of delivery would point out the nature of the case. In some few cases which have fallen under my own observation, the presence of a fœtid discharge was connected with retroversion of the gravid uterus occasioning such retention. In some cases also I have observed the same circumstance in conjunction with retention of portions of the ovum with anteflexion. Offensive discharges in women *during the puerperal state* are so obviously connected therewith, that the relation of the two things as cause and effect could hardly escape recognition.

Apart from the existence of pregnancy, *flexions* of the uterus causing retention of fluid within it may give rise to offensive discharge.

It is possible that the hymen may, by preventing free escape of fluid from the vagina, be the cause of an offensive discharge.

It sometimes happens that the discharges from the vagina are offensive without any obvious cause. Thus cases are observed in which the discharge at the menstrual period is offensive, and preceded or followed by leucorrhœa having the same character. In such cases flexion of the uterus will generally prove to be the cause.

Want of cleanliness is occasionally connected with the presence of an unpleasant odour of the discharges from the generative organs. When the sebaceous follicles situated at the entrance of the vagina secrete copiously, this phenomenon may be observed.

Among the physical qualities of discharges from the vagina, *their effects on the surface of the body with which they come into contact* have to be considered. Some discharges from the vagina are quite devoid of irritating properties; but the reverse is often observed. Irritating effects, such as redness, excoriation attended with smarting pain of the skin of the inner side of the thighs and the external genitals, are common in connection with excessive vaginal secretion, however produced; the constant contact with the vaginal secretion, often in a state of hyper-acidity, produces this result. Another class of cases in which excoriations of the same parts are frequently seen, are those attended with a caustic irritating discharge from the ulcerating surface of a cancerous disease of the cervix uteri. Again, *syphilitic* sores may spread

and produce others in the immediate neighbourhood; and we take advantage of the knowledge of this fact for purposes of diagnosis, when we inoculate the skin of the thigh with discharge from a sore on the labia, or on the vaginal wall, which we suspect to be of venereal character.

GONORRHŒAL AND SYPHILITIC DISCHARGES.

The interest attaching to the subject renders it necessary to devote a short time to the consideration of *syphilitic* and *gonorrhœal leucorrhœa*, and to mention some facts useful in the elucidation of cases suspected to be of this nature.

The subject is a difficult one, the pathology of these affections being still in a very unsettled condition, and observers being by no means agreed as to what is to be called gonorrhœa, and what syphilis. Thus Dr. Whitehead considers that the uterus, in cases of gonorrhœa, is more affected than the vagina; by others the vagina is considered to be the proper seat of the affection. Dr. Tyler Smith believes that many of the cases set down by Dr. Whitehead as cases of gonorrhœal leucorrhœa were cases in which the leucorrhœa was of syphilitic origin.

There appears unquestionably to be a *syphilitic leucorrhœa*; but the difficulty is to distinguish it from the more simple form. It may be considered as probable that it is present when the leucorrhœa has been present for some time, associated with frequent previous abortions or birth of dead children; when secondary syphilitic affections of the throat, skin, bones, &c., are present; but above all, when it appears to be influenced by the administration of anti-syphilitic remedies. Further, the state of the glands in the groin is important. These become enlarged and indurated when syphilitic leucorrhœa is present, but do not suppurate; when there is suppuration, it must be considered as indicating the improbability that the individual is the subject of syphilis, or that she is likely to present secondary symptoms. It must not be forgotten that the glands in the groin may suppurate in scrofulous individuals who, it may be, are also affected with genuine syphilis. On external or internal examination, condylomata, ulcerations, or other characteristic evidences of syphilis, may be observed. The discharge from the vagina is said to be often very great in quantity in these cases, to be yellowish in colour, and to contain much mucus. On these latter characters little absolute reliance can be placed for purposes of diagnosis.

In reference to the diagnosis of supposed *gonorrhœa*, it has always been found very difficult to substantiate the presence of the virus in the female subject, for the reason that the discharge arising from gonorrhœa and that of ordinary leucorrhœa are very much alike. Gonorrhœa in the female is, in its worst form, an intense vaginitis, the discharge being made up of epithelial plasma and purulent matter; more frequently it is a vulvitis, the inflammatory action being limited to the mucous surfaces at the vulva. The meatus urinarius very frequently participates in the discharge and irritation in cases of gonorrhœa. The collateral facts relating to the coming on of the attack are characteristic: the attack begins somewhat suddenly; there are heat, pain, and burning along the course of the urethra, all intensified and increased during micturition; there is usually also a discharge from the urethra. Sometimes blood follows the evacuation of the bladder. When the gonorrhœal discharge has become chronic, the urinary irritation may have become so much lessened in degree as not to attract attention unless enquired after. If the presence of a discharge from the urethra can be made out, it will very materially assist the diagnosis. Sir C. M. Clarke thought the diagnosis of gonorrhœa impossible; and it must be confessed that this is very often found to be the case. A method of observation by which the diagnosis is often much assisted, consists in ascertaining the effect of sexual intercourse in suspected cases: only it is liable to this source of fallacy, that a discharge in one sex producing a discharge in the other does not prove that the infecting individual is the subject of gonorrhœa; for it is a well-authenticated fact that an apparently simple discharge in the male may give rise to a discharge in the female, and *vice versâ*. Cases in which these points rise up for determination require the exercise of great caution and careful investigation before giving an opinion. A case of simple balanitis in the male, contracted by intercourse, may, it is said, be distinguished from a case of gonorrhœa by the fact that the symptoms of the former affection come on a few hours only after intercourse, whereas in gonorrhœa there is a period of incubation of from four to fourteen days, attended with chordee.*

It is impossible for the practitioner to exercise too great caution in pronouncing an opinion for or against the specific nature of a discharge from the female generative organs. In the words of the

* See case by Mr. Nunn, quoted by Dr. Tyler Smith in his work *On Leucorrhœa*, p. 129.

late Dr. Ashwell, 'it is always his duty to cure the disease, but rarely to venture upon an exposition of its nature. If he can positively affirm that it is of simple origin, let him do so, if suspicion has been aroused; if not, it is better to avoid any distinct allusion to the matter.'*

CAUSES OF NON-SANGUINEOUS DISCHARGES.

From what has been already stated in reference to the varieties of physical characters observed in the non-sanguineous discharges from the generative organs, it will be gathered that the *causes* of these discharges are many.

They resolve themselves into two, *constitutional* and *local* causes.

Constitutional or General Causes.—The first of these is *climate*. In warm countries, leucorrhœa is more common than elsewhere, and coexists with a great tendency to menorrhagia, which indeed, in common with the leucorrhœa, arises in great measure from deficient tonicity of the uterine vessels, frequently the forerunner of serious uterine disease. Moist and damp situations appear to have a similar effect: thus the inhabitants of Holland, Belgium, and the fenny districts of England, are said to be peculiarly liable to leucorrhœa.

A state of *plethora* is capable of giving rise to leucorrhœa, the discharge being in such a case a kind of relief to the overcharged system. Women who live too well and take but little exercise suffer in this way. When the opposite state of things is present, and the system is reduced by losses of blood or defective nutrition to a condition of *anæmia*, leucorrhœa may be one of the results observed. Whether in the case of a plethoric or an anæmic patient, leucorrhœa may occur irrespectively of child-bearing. It very frequently happens, however, that the influence of *child-bearing* is very considerable in causing leucorrhœa, particularly in anæmic individuals. The effect of child-bearing is twofold. Women of weakly constitution, whose blood is thin and watery, frequently suffer to a very troublesome extent from leucorrhœa during the period of pregnancy; after pregnancy has ended, the increased action of the various glands connected with the generative organs continues, the effect of which may be persistence of the leucorrhœa.

* *Diseases of Women*, p. 175.

In individuals of *phthisical tendency*, leucorrhœa is more apt to arise in connection with child-bearing; and in such persons, indeed, very frequently independently of it. In some cases, *over-lactation*, by inducing a state of extreme debility, appears to produce leucorrhœa, often in an extreme degree of profuseness.

The relations of *menstrual disorder* and leucorrhœa as cause and effect require a word or two. Leucorrhœa is often present in individuals in whom menstruation is absent; and Dr. Tyler Smith* considers the leucorrhœa as vicarious of the menstrual secretion in such cases. It is questionable how far this view of the case is correct. It appears more rational to suppose that both the leucorrhœa and the menstrual deficiency are due to derangement of some one or other of the vital processes. Thus the individual is rendered weak by over-lactation or some other debilitating agency; the menstrual secretion becomes less and less healthy, and less sanguineous in character; she becomes affected with leucorrhœa; the leucorrhœa is then naturally more profuse at the menstrual period, when the generative organs are in a state of engorgement, than at other times.

Chronic disease of the lungs, especially *emphysema* and *valvular affections of the heart*, are often observed in association with chronic leucorrhœa, which is, under such circumstances, difficult to cure.

There are some general observations which apply to all these cases in which leucorrhœal discharge arises from a constitutional or general cause—that, as a rule, symptoms which are usually associated more particularly with actual pathological changes in the uterus, such as pain, tenderness, &c., are, at all events at first, absent. Further, the quantity of the discharge is not very considerable, unless there be some local reason for it; and lastly, the discharge itself, when produced by purely constitutional causes, is less liable to become offensive or sanious than in cases where there is some actual lesion of the generative organs present.

When leucorrhœa is present, associated with any general defective condition of the bodily health, it may be taken for granted that, if the leucorrhœa be not absolutely dependent thereon (a relation which is found to subsist in many cases), it is at all events aggravated and rendered persistent thereby.

Local Causes.—In the table of cases given at p. 5, it is stated that the number of cases of leucorrhœa was 37 out of 1,205 patients. This figure by no means represents the frequency of this sym-

* *On Leucorrhœa.*

ptom, the 37 cases in question being chiefly (25 of them at least) cases in which no examination was made, and they were put down as cases of leucorrhœa because this was the prominent symptom. It would serve no useful purpose, therefore, to set forth a tabular statement of these cases. According to my experience chronic leucorrhœa, using the term in the most general and comprehensive sense of the word, is almost invariably found to be dependent on a local tangible alteration or disease of the generative organs. Very many cases, which were formerly set down as cases of leucorrhœa due to constitutional causes, would now be taken out of that category altogether. Since my attention has been attracted to the subject I have had numberless occasions of verifying this statement, and the very prominent position which *flexions of the uterus* have been found to occupy as the *fons et origo mali* in cases of chronic leucorrhœa otherwise unexplainable, induce me to place this lesion of the uterus foremost in the list of the local causes. The flexion is the indirect cause, associated as it is with *congestion of the uterus*, and an excessive secretion from all parts of the uterine mucous surface. I have met with some few cases in which the leucorrhœa was the only symptom present, but this is a comparatively rare conjunction of circumstances.

Hypertrophy of the cervix uteri, or of the *body of the uterus*, fibroid growths in the uterus either in the form of *fibroid tumours*, or *fibroid polpyi*, *mucous polypi*, these are almost always accompanied with leucorrhœa, sometimes with very abundant watery or non-sanguineous discharge. *Inversion of the uterus*, *cancer of the uterus* in its various forms, give rise to characteristic non-sanguineous discharges often very profuse in quantity. *Prolapsus of the uterus*, or *of the bladder*, *growths in the vagina*, are other causes. *Excessive sexual intercourse*, masturbation, the latter generally accompanied by a very relaxed condition of the vaginal aperture, are causes of leucorrhœa.

Ascarides in the rectum are not uncommonly the cause of leucorrhœa, not only in children, but in adults. In such cases the ascarides appear to travel from the rectum to the vagina. *Hœmorrhoids*, *vascular tumour of the meatus urinarius*, may also produce leucorrhœa.

The *specific* causes of leucorrhœa are *gonorrhœa* and *syphilis*. In these cases the affection is more generally limited to the *vulva*, but the inflammatory actions may extend higher up, even as far as the uterus itself, and in a few cases probably as far as the

ovaries (*gonorrhœal ovaritis*). The diagnosis of the specific causes of leucorrhœa has been already alluded to (p. 452).

TREATMENT OF LEUCORRHŒA.

The question as to the best method of treatment to be pursued for the removal or amelioration of discharges of the kind now under consideration is a very wide one. It has been shown that these discharges arise from, or are produced by, an immense variety of causes, and the treatment must differ correspondingly, according to the nature of the case. Perfectly satisfactory results can only be hoped for from a mode of treatment based on a complete knowledge of the case actually before us, and on a just appreciation of the relations which, as causes and effects, subsist between the condition of the patient and the symptoms present. To endeavour to seize upon the true *indication* for treatment, this should always be our object; and, to be able to do this, the diagnosis must be a complete one.

The treatment of leucorrhœa (excluding from the consideration discharges of a specific nature) is of two kinds, *general and local*. In most cases, a combination of the two is the more suitable, and yields most satisfactory results. Even when there is a tangible alteration of the uterus, giving rise to leucorrhœa, general treatment is often of very great service; although, in order to cure the disease giving rise to the discharge, local measures may be indispensable.

To remove the *cause* of the leucorrhœa is the first indication. The treatment must have regard primarily to that. In a case of phthisis, for instance, in which leucorrhœa is present, the treatment must have regard to the phthisis in the first place, although it may be necessary also to employ local or other measures calculated to arrest or diminish the leucorrhœal discharge. Where the leucorrhœa is due to, or associated with, an anæmic condition, the removal of that condition should be the chief object of our endeavours. If there be any reason to suppose that the patient's residence is unfavourable hygienically, this must be remedied. If the leucorrhœa be associated with exalted activity of the sexual organs, as is sometimes the case when intercourse is indulged in inordinately, the indication is obvious. There are few cases of leucorrhœa in which the uterus is altogether sound. The organ is usually congested, large, its tissues relaxed, and the activity of

the glandular apparatus lining the cervix unnaturally increased; under such circumstances, the primary object is to remove the condition of the uterus on which the leucorrhœa depends. (See 'Treatment of Chronic Congestion of the Uterus.') The next element in the treatment is of the utmost importance; in all cases it is absolutely essential to supervise the due action of the digestive organs, and of the great cutaneous surface. Plans of treatment, in other particulars the most judiciously contrived, may prove useless unless these primary points be attended to. The quantity, quality, and mode of taking food, must be carefully adjusted to the requirements of the case. The skin must be kept warm, and its due action insured by employment of friction, baths, and exercise. In patients who have been long the subjects of leucorrhœal discharge, the importance of carefully regulating the 'mode of life' cannot be over-estimated; and it is the more necessary to insist on this, as not unfrequently the practitioner on the one hand, and the patient on the other, pay far too little attention to these essentials; the result of this neglect being a temporary, and not a radical, cure of the affection.

Here a caution must be given. There are some cases of long-standing profuse leucorrhœa in which bad results may ensue from a too sudden stoppage of the discharge; due caution should be exercised, therefore, in the application of remedies in these cases.

Resort to Watering-places.—Several watering-places have obtained repute from the efficacy of the mineral waters there to be obtained in removing leucorrhœa, especially that of a chronic form. It is unquestionable that very good effects are frequently obtained under the use of the waters in question; the effect produced results in many such cases from the change of air, the perfect rest and relief from the ordinary cares and anxieties, the regular exercise, simple diet, and the change in the mode of life generally, all of which play, unquestionably, a most important part in bringing about the cure, as much as from the specific curative power of the water itself. The improvement in the general health is usually rapidly followed by a cessation or diminution of the leucorrhœa. In a certain number of cases we find great difficulty in persuading patients to follow up systematically the course of treatment enjoined while they are living in their own houses, surrounded by home associations, and in a manner tied down to home habits; and for this reason it is sometimes necessary to send patients to watering-places in order that they

may be induced to give themselves a fair chance of recovery. In the choice of a watering-place, regard must be had to the special condition and requirements of the patient. Needless to say, the chronic distortions of the uterus, so frequently the cause of the leucorrhœa, do not become cured by resort to watering-places: the symptom (the leucorrhœa) is perhaps for the time relieved, but that is all.

Baths.—These are very powerful therapeutic agents in the treatment of cases of leucorrhœa dependent on constitutional causes. The use of the bath has the effect of determining the blood to the skin, and thus relieves the congestion of the internal organs usually present in these cases. The condition of the patient must be regarded in reference to the choice of the form of bath. The most simple form of bath is the 'sponge-bath,' the patient being directed to sponge the whole of the body night and morning with water, at first tepid, and then quite cold; the skin being rubbed dry by means of a coarse towel, and the friction continued for some minutes. Then comes the hip-bath. This may be at first used tepid, afterwards cold. The hip-bath may be either of pure, salt, or medicated water. If the hip-bath be medicated with the view of the fluid acting upon the interior of the vagina, means must be taken to insure the passage of the fluid into this canal. Various contrivances are recommended for this purpose; a short medium-sized Ferguson's speculum is one which may be advantageously employed. The hip-bath is, however, very serviceable when plain water is used. After the bath, the skin should be rubbed as in the case of the sponge-bath. With due care, the hip-bath or sponge-bath, alone or together, may be used in all cases, however debilitated the patient may be. It is necessary that a 'reaction,' as it is termed, take place after the bath, or it does harm, and the patient suffers from headache or other inconvenience for some hours after. For those who are able to bear it, the 'shower-bath' or the cold plunge-bath are to be recommended. There are some cases which are most benefited by the warm bath, in which the patient is wholly immersed. Thus, in cases of leucorrhœa which, from the severity of the symptoms and suddenness of their invasion, may be termed *acute*, the warm bath is of the greatest utility.

Injections.—Judiciously used, injections are of the greatest value in the treatment of leucorrhœa. In many cases they have a curative effect; in all cases they are of some service; and in certain cases they are almost indispensable. But it is not less

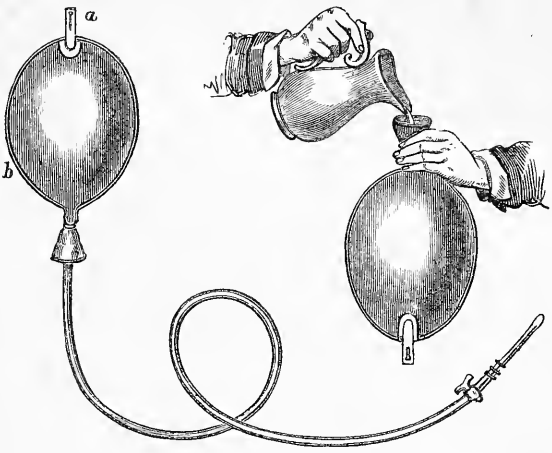
true that leucorrhœa may be often cured without recourse to injections at all.

The first point to be attended to in the employment of injections is the form of instrument to be used. It is in most cases mere trifling to employ a small syringe. What is necessary is an apparatus by means of which a considerable quantity of fluid may be thrown up and obtain access to the cervix uteri. A large-sized gum-elastic vaginal pipe rather longer than the speculum, open above by five or six tolerably large perforations, should be first introduced into the vagina so as to reach the os uteri. Having been introduced, the lower end of the pipe is then to be connected with the pipe of the injection apparatus. This is made in a variety of forms. The most convenient of the apparatus hitherto employed is Kennedy's syringe. I have, however, found it exceedingly difficult to induce patients, especially those who are weakly and debilitated, to use any instrument requiring the application of manual force, however slight, for a sufficient length of time to do good; moreover, the quantity of fluid capable of being used at each operation is too restricted. One of the most important—as I believe *the* most important—therapeutic actions of injections, is due to the application of cold to the inferior segment of the uterus, by which the contractile power of the blood-vessels is increased, and the chronic congestion or inflammation of the part diminished. In order that this particular action may be best insured, it is evident that a somewhat continuous irrigation of the cervix uteri is necessary, and this is not to be had by the ordinary apparatus—unless, indeed, by taking unusual pains or trouble in the matter. In order to supply the defect in question, I have had constructed a very simple and effective instrument, by which the patient can have the benefit of irrigation of the vaginal part of the uterus of some minutes' duration, and without the necessity for manual effort, such as pumping, of any kind. An india-rubber bag or reservoir, capable of holding nearly a gallon of water, has attached to it a long flexible pipe, which ends in the vaginal exit tube. The bag filled with water is hung up above the patient, or placed on an article of furniture a little above the patient's body. The water descends by the action of gravitation alone; the rapidity of the flow is regulated by simply turning a stop-cock, placed just outside the vaginal tube, and the water flows until the reservoir is empty. The douche apparatus in question has the advantage of great portability and simplicity. The douche should, it is hardly necessary to observe, be

used with caution in cases where pregnancy is suspected to be present.

The next question is as to the nature of the fluid to be injected.

Fig. 94.*



Very much benefit will be derived from the use of plain cold water, if only a sufficient quantity be used at each injection. And for a variety of reasons, not the least of which is that it is always accessible, and no preparation or forethought is required, it is advantageous to use water alone. The cold water has a powerful effect in diminishing that congestion of the uterus and generative organs generally, which is usually present in the class of cases now contemplated. And it is, as I have just remarked, very questionable whether the effect of injections as ordinarily administered, in diminishing the discharge, be not for the most part due to this circumstance. Medicated injections do not, as a rule, actually come into contact with the surface (the interior of the cervix), which, in obstinate chronic cases, is the chief source of the discharge, and chiefly act on that small part of the cervical cavity which is exposed at the os uteri.

A variety of substances are used mixed with water, and constituting *medicated* injections. Most of these are considered beneficial from the astringent properties they possess. Alum, sulphate of zinc, nitrate of silver, decoction of oak bark, or tannin, are

* The 'uterine douche,' constructed as described above, is to be procured of Messrs. Savory and Moore, New Bond Street.

those most ordinarily used. A combination of tannin and alum (one or two drachms of tannin with four drachms of alum to two pints of water), recommended by more than one eminent authority, I have found very convenient. In all cases where medicated injections are used, it is desirable to employ, first, a simple injection of water, and to throw up the medicated liquid last. It is frequently found necessary, in obstinate cases, to change the injection from time to time. A particular remedy loses its effect after a few days' use.

Medicated Pessaries.—These are prepared with cacao butter, have the shape of a rifle bullet, and contain various astringent or caustic substances in suitable quantities. When cold, they are firm and easily adjusted in position at the os uteri. The warmth of the body soon liquefies the pessary, and leaves its active constituents free.

Blisters to the lumbar or sacral region are sometimes employed in obstinate cases of leucorrhœa.

Injections of a medicated nature are now and then necessary to obviate the offensiveness of the discharge which may be present, as in cases of cancer, cauliflower excrescence of the os uteri, &c. In such cases, antiseptic agents, e. g. diluted tincture of iodine, tincture of iron, perchloride of iron suspended in glycerine, chloralum, &c., and applied by means of cotton wool or lint, are exceedingly useful.

In cases where the discharge is acrid, and gives rise externally to irritation, it is necessary to order frequent ablutions with tepid water. A lotion containing a little carbonate or biborate of soda in solution is occasionally found serviceable in such cases.

Internal Remedies.—The object with which we give internal remedies in leucorrhœa is usually that of remedying the constitutional derangement, whatever that may be, which is present. Purgatives may be necessary to produce regular action of the bowels, especially at first—and of these it is better to give small doses frequently than large doses at longer intervals. Where the patient is chlorotic, aloes may be given; but in other cases it is, as Dr. Tyler Smith justly remarks, to be avoided. The debility with which in most cases leucorrhœa is associated, necessitates the employment of tonic remedies, of which the best is unquestionably iron: less probably depends on the particular form of the drug than on the fitness of the case for iron in any shape. Certain therapeutic agents, such as cubebs, copaiba, &c., have been recom-

mended in leucorrhœa, as having special effects in diminishing secretions from mucous surfaces. The ergot of rye has a better claim to our notice. I have used it in cases where the uterus was in a lax, congested condition, with the double effect of relieving the profuse menstruation and leucorrhœa sometimes associated. As a rule, we cannot expect much specific effect from internal remedies in cases of leucorrhœa. Stimulants are very frequently necessary in the treatment of chronic cases of leucorrhœa attended with debility and prostration ; they are to be looked upon in some instances quite as essential as good food. The stimulant selected should be one which is found to suit the patient. The administration of stimulants is to be reprehended when the patient is plethoric, and when the viscera, pelvic and abdominal, are loaded with blood, and the quantity should be carefully specified and overlooked, care being taken that when the patient is stronger the dose be diminished. The leucorrhœa endemic in fenny districts is treated successfully by bark, wine, gin, and tea and coffee.

Schönbein and Aran have recommended lavements containing aloes, suspended in mucilage or soap and water, in the treatment of chronic leucorrhœa. The lavements are to be used every day, or every other day, the rectum having been first washed out by water alone. The remedy in question must be used with caution. It may here be remarked that aloes formed one of the principal ingredients in the celebrated pills of Stahl—in high repute many years ago for the cure of leucorrhœa.*

The treatment of leucorrhœa dependent on local disorders of various kinds necessarily involves the removal of the special cause.

* See Dr. D. D. Davis's work, vol. i. p. 367.

CHAPTER XXI.

PERI-UTERINE HÆMATOCELE.

Pathology of the Subject—Positions in which the Hæmorrhage occurs, and Symptoms attending its occurrence—Intra-peritoneal, Extra-peritoneal, Causes of Peri-uterine Hæmatocele enumerated—Results.

Diagnosis.

Treatment.—Means of arresting the Menorrhagia—Treatment of Pain, Collapse, &c. —Question of Puncture.

The terms 'pelvic hæmatocele,' 'peri-uterine hæmatocele,' 'retro-uterine hæmatocele,' 'pelvic hæmatoma,' have been of late years used to designate an effusion of blood in the neighbourhood of the uterus, giving rise to formation of a tumour. The occurrence of hæmorrhage in and amongst the pelvic viscera in women, although spoken of by several of the older authors, has only within the last twenty years received that amount of attention which its importance deserves. To Bernutz,* Nélaton, and Voisin of Paris, the profession is indebted for first indicating and explaining the nature, course, and symptoms of this affection. In this country, Dr. Tilt was the first to draw attention to the matter; Dr. West has written an admirable account of it in his work on 'Diseases of Women;' Sir J. Y. Simpson has described it, in his ordinary felicitous manner, in his 'Clinical Lectures.' The works of Voisin† and Bernutz,‡ an admirable essay on the subject by Dr. M'Clintock,§ the valuable observations of Dr. Madge,‖ Dr. Matthews Duncan,¶ and a very complete and exhaustive essay by Dr. Tuckwell,** comprising an analysis of 98 published cases,

* See *Arch. Gén. de Méd.* 1848.

† *De l'Hématocèle rétro-utérine, et des Epanchements sanguins non-enkystés de la Cavité Péritonéale du Petit Bassin.* Paris, 1860.

‡ *Clinique Médicale sur les Maladies des Femmes*, vol. i. 1860. Translated by Dr. Meadows for New Syd, Soc. 1866–7.

§ *Clinical Memoirs on Diseases of Women.* Dublin, 1863.

‖ *Obstetrical Trans.* vol. iii.

¶ *Edin. Medical Journal.* Nov. 1862.

** *On Effusions of Blood in the neighbourhood of the Uterus.* Oxford, 1864.

may be referred to for information on this interesting subject. Dr. Savage, Dr. Barnes, Dr. Meadows may be mentioned among those who have more recently published valuable observations thereon. The views at first entertained and expressed respecting this newly discovered pathological condition were somewhat opposed to each other, and there is still much difference of opinion as to the nature, seat, and mode of origin of the hæmorrhage, although the difference is really less than it has been represented to be.

Bernutz, whose claims to be considered as the first modern observer and expounder of this pathological condition stand before all others, rightly insists on the mischief which has arisen from treating the effusion, clot, or tumour, as a sort of entity, and of the confusion which has arisen from speaking of pelvic hæmatocele or uterine hæmatocele as a disease *per se*; whereas it is really but a symptom, a consequence, an effect, or an accident, as the case may be, of exceedingly varying conditions. We find that one kind of hæmorrhage in a particular situation is termed 'true' hæmatocele by one author, while another author limits the term hæmatocele to an effusion of blood in another locality. The fact is, that if we retain the use of the term 'hæmatocele' at all, it must be understood that no particular disease is meant thereby; it is a convenient term, as indicating simply presence of effused blood: and if we use the double term 'peri-uterine hæmatocele,' which is on the whole a convenient one, it must be understood to imply effusion of blood in the neighbourhood of the uterus. It will so be used in this place, and without restriction of any kind as to the precise seat of the effusion.

The circumstances leading to the pouring out of blood in the neighbourhood of the uterus will be presently mentioned; but, in the first place, it will be advisable to point out the anatomical positions in which hæmorrhage is liable to occur.

Intra-peritoneal Hæmorrhage.—Hæmorrhage may take place into the peritoneal cavity, the blood collecting in the pelvis, and lying on and between the pelvic viscera; and the blood may come from some vessel in the pelvis itself, or from a vessel situated in the abdominal cavity. The blood collects in the pelvic cavity, which it fills more or less completely according to the quantity poured out. If the effusion proceed rapidly, it may kill the patient before coagulation of the blood has taken place. If the effusion take place slowly, the blood effused generally coagulates, and the coagulum becomes limited to a certain situation by inflam-

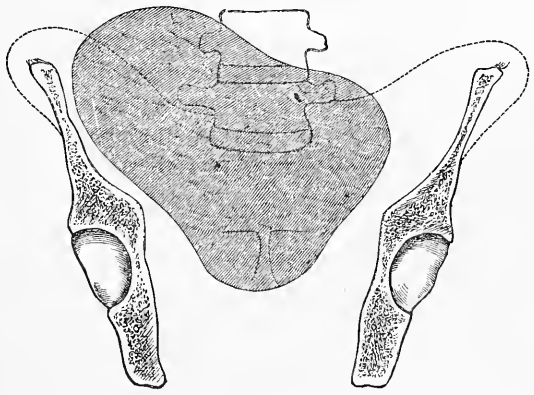
matory products, or by the free border of the coagulum only. In this case it is spoken of as encysted: but, under some circumstances, no such limitation of the blood occurs. It will be obvious that, when the blood has coagulated, the coagulum will form a tumour having certain physical characters, and which, if the coagulum be in the pelvic cavity, may be felt through the vaginal walls on digital examination. If the examination be made early, fluctuation may be perceivable, but it is often difficult to make out fluctuation satisfactorily. If the examination be made soon after the coagulation has occurred, the tumour will be soft and ill-defined, and the more so as it will be probably at this time surrounded by serum not yet absorbed. If the examination be made later, the tumour will be harder and more resistant. Later still, it will be found either to have become reduced in size, or to have undergone a softening process or liquefaction. The blood drawn off by operation has a syrupy consistence and a peculiar odour, compared by Dr. Matthews Duncan to that of faded and slightly decomposing flowers. It is obvious that the physical aspects of the tumour, as felt through the vaginal wall, will vary according to the amount of blood effused and the quickness with which this occurs. A large and sudden hæmorrhage would leave behind it a clot filling the whole pelvic cavity, dipping down behind and at the sides of the uterus, as far as the peritoneum extends. The uterus would in such a case be felt to be embedded in a mass of semi-solid substance. On the other hand, a small hæmorrhage would give rise to a coagulum, which might be felt only in one part of the pelvis—e.g. behind the uterus, in the Douglas fossa ('retro-uterine hæmatocele'). The effect produced on the patient by hæmorrhage into the peritoneal cavity appears to vary very considerably. In one case—and this is perhaps the rule—it sets up violent inflammatory action; in another, the presence of the blood is better tolerated. The effect on the patient *quoad* the loss of blood necessarily varies according to the amount lost and the ability of the patient at that particular time to bear losses of blood of any kind. It is almost unnecessary to point out that when a large coagulum occupies the pelvic cavity it gives rise to the 'pressure' signs observed in the case of other pelvic tumours, such as difficult defæcation, difficult micturition, a sense of fulness, pains in the lower extremities, &c.

It may or may not be the case that very slight hæmorrhages into the pelvic peritoneal cavity occur frequently, and are clinically unrecognised. When, however, the hæmorrhage is considerable,

the symptoms produced are of a peculiar kind, most alarming, most intense in character. The symptoms are those of hæmorrhage and of peritonitis combined. Thus the patient becomes deadly faint, and at the same time complains of an agonising pain in the lower part of the abdomen. The fainting is more or less continuous, but it is greatly more intense at intervals. And so with the pain, this being generally continuous, but liable to exacerbation to an extreme degree at times. It is characteristic of the attack that it begins suddenly, and most frequently it happens that the attack is coincident with a menstrual period. There may be, adopting Dr. M'Clintock's arrangement of the symptomatology, three modes of invasion: 1. The sudden and acute form; 2. A form less severe and overwhelming in its effects, life not being so evidently threatened; 3. A sort of chronic form, the symptoms being developed gradually, or in succession.

Extra-peritoneal Pelvic Hæmorrhage.—The term 'thrombus' has for some time been used to designate a blood coagulum in the cellular tissue of the labia, or near the external outlet of the organs of generation; and the term is obviously quite as applicable

Fig. 95.*

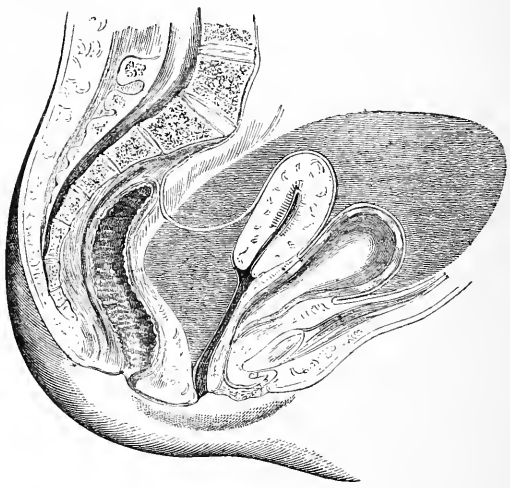


to the coagulum, resulting from hæmorrhages taking place higher up, that is to say, in the cellular tissue near the uterus, in the broad ligaments, &c. Whereas, however, the thrombus of the external generative organs has for a long time been well known, it is not so with the thrombi of the internal generative organs. It is now known that an effusion of blood near the uterus in the

* Fig. 95 gives an outline of the tumour in a case (P. H.) in University College Hospital, where the hæmorrhagic effusion was apparently extra-peritoneal.

situations above indicated is not uncommon. By some authors the effusion (or its coagulum) is spoken of as a 'thrombus;' by others it is considered as a 'peri-uterine hæmatocele.' Thus Bernutz only admits intra-peritoneal hæmorrhages as causes of hæmatocele, and considers extra-peritoneal hæmorrhages as instances of thrombus. This author, it should at the same time be remarked, believes that the extra-peritoneal form of hæmorrhage is comparatively rare. It is more convenient, however, to discard this word thrombus, and, whether we agree with Bernutz or not as to the rarity of extra-peritoneal hæmorrhage, to apply the term 'peri-uterine hæmatocele' to hæmorrhages having this anatomical position. If the nosology of the subject were to be considered *de novo*, there would be much to be said in favour of a different nomenclature.

Fig. 96.*



The seat of the extra-peritoneal hæmorrhage now under consideration is the connective tissue around the uterus and ovaries and pelvic viscera generally. The position and shape of the tumour resulting from coagulation of blood so effused necessarily varies according to the precise situation of the bleeding vessel. Thus if the bleeding vessel be in front of the uterus, the tumour

* Fig. 96 gives a lateral view of the position of the tumour in a case also lately in University College Hospital. The effusion appeared in this case to be extra-peritoneal, and was of very considerable extent.

will likewise be in front; and if the bleeding continue, the coagulum may extend from this point laterally on each side. If the bleeding vessel be behind the uterus, the coagulum will be there evident. The pelvic viscera become dislocated by the tumour resulting from the coagulation, to a degree necessarily dependent on the extent of the hæmorrhage. The tumour may extend from the pelvis high up into the abdomen. The physical character of the tumour, as regards hardness, softness, &c., is subject to variations of the same kind, as detailed in the case of extra-peritoneal hæmorrhage. In fact, so nearly do the physical characters presented by the tumour in extra- and intra-peritoneal hæmorrhage agree, that it is hardly possible to distinguish them. The tumour in both cases may rise high above the pelvis into the abdomen; in the extra-peritoneal form it may be extremely large. The symptoms do not, as far as can be ascertained, differ in the two cases; and that this is true may be judged of by the fact that it is hotly disputed whether in the majority of cases the hæmorrhage is intra- or extra-peritoneal. In the extra-peritoneal hæmatocele the tumour may reach lower down in the pelvis; an hæmatocele tumour found extending upwards from the vulva into the pelvis would almost certainly be extra-peritoneal; * the reflexions of the peritoneum would prevent such a descent of the tumour in the intra-peritoneal form. With this exception, there appears to be hardly anything in the physical characters of the tumours in the two cases to distinguish them. The changes which are observed in the coagulum formed do not materially differ, whether the hæmorrhage be intra- or extra-peritoneal. Absorption, softening, abscess—these are effects which may equally result. A tarry, syrupy condition of the contents is generally observed when the blood is not soon absorbed; the blood corpuscles become shrivelled and contorted, mixed up with pus cells, crystals, patches of pigment, &c. It not unfrequently happens that the tumour, at first small, becomes enlarged at the next menstrual period, from a recurrence of hæmorrhage. Meanwhile, inflammatory action goes on, and during the progress of the combined and simultaneous effusion and inflammation the tumour increases.

We may now pass on to the consideration of the

Causes of peri-uterine Hæmatocele—under which term will

* It is, however, important to recollect, as Dr. Phillips has pointed out, that the retro-uterine pouch descends very low in certain cases, so far, indeed, as to allow an effusion of blood within it to approach more closely than would have been supposed possible to the vulvar aperture. See *Obstet. Trans.* vol. xiii. p. 179.

be included all cases in which an effusion of blood takes place in the neighbourhood of the uterus so as to constitute a tumour perceivable through the vaginal walls.

Rupture of some one of the vessels in the uterine or ovarian plexus.—It has been already (see 'Phenomena of Menstruation,' p. 15) pointed out that the thick stratum of vessels forming a thick network immediately external to the uterus undergo, under various circumstances, a kind of erection, in process of which they become greatly distended and enlarged, and that this erection occurs, in all probability, during menstruation, during intercourse, and under other circumstances. Lying beneath the ovary, in the folds of the broad ligament, there is also a rich plexus of vessels—the pampiniform plexus, together with a mass of tortuous vessels now known as the bulb of the ovary; all these vessels are also susceptible of great enlargement. The functional activity of the uterus and ovaries is thus connected with a considerable engorgement and distension of the plexuses of vessels now referred to. The tissues of the uterus and of the ovaries are doubtless congested at the same time; but it is evident that when blood is determined to the internal generative organs, the greater part of it goes to distend the very large and numerous vessels in the uterine and the pampiniform plexuses and the ovarian bulb respectively.

Dr. Savage* points out the particularly free communication which subsists between the perineal and pelvic venous systems, and that these veins are unprovided with valves. The plexus of veins round the uterus, round the vaginal canal, round the urethra, and round the entrance of the vagina, enjoy free communication one with the other. Dr. Savage points out also the valuable obvious inferences derivable from these considerations, in reference to the etiology and progress of hæmatoceles at the pudendal region. The enormous hæmorrhage sometimes observed in cases of rupture of vaginal varices, &c., is thus intelligibly explained. The number and size of the veins constituting the plexuses of the female generative organs is a great predisposing circumstance to the occurrence of hæmatoceles.

The foregoing facts have a very important bearing on the present question; they afford us the means of explaining satisfactorily why it is that hæmorrhage is liable to occur in the connective tissue around the uterus, and in the folds of the broad

* Plate IV. *loc. cit.*

ligament. The clinical facts amply bear out the conclusions deducible from physiological considerations. Rupture of some one of these vessels may be produced by violent or immoderate sexual intercourse, by undue bodily exertion of any kind during menstruation, and probably under other circumstances also. When a vessel has given way, the effusion of blood may be trifling or considerable, according to circumstances. In some cases, the first hæmorrhage is slight, but under reapplication of the exciting cause it recurs, and finally a tumour of considerable size is formed. The seat of the ruptured vessel determines the position of the tumour. When the uterine plexus is implicated, the hæmorrhage is probably almost always extra-peritoneal; but if the rupture affect a vessel in the pampiniform plexus or in the ovarian bulb, the hæmorrhage may readily occur into the peritoneal cavity, although more generally it probably occurs within the folds of the broad ligament, and is extra-peritoneal. The intra-peritoneal cases are most likely to prove fatal, apparently because there is less limit to the amount of hæmorrhage. A 'varicose' condition of the vessels in the pampiniform plexus has been noted in some cases where rupture into the peritoneal cavity has occurred; and it is rational to infer, in many cases, the existence of a chronic varicose condition of the uterine and ovarian plexus of veins.

It is probable that, in by far the majority of cases, the source of the hæmorrhage giving rise to the tumours classed under the term 'peri-uterine hæmatocele,' is that which has been now indicated. On this point, however, there is difference of opinion. In most cases of peri-uterine hæmatocele, the patients recover, and the anatomical evidence is wanting. Dr. Matthews Duncan, who has published a valuable paper on the subject,* has well argued the question from this point of view. His experience has convinced him that the extra-peritoneal form of hæmorrhage is probably a common form of the disease, the clinical facts which have come under his observation having been opposed to the conclusion that an intra-peritoneal seat of the effusion was possible in certain of the cases related. Dr. Duncan admits, in common with other recent authorities, that the effusion is intra-peritoneal in many cases. From Dr. Tuckwell's analysis of published cases it appears that the effusion was intra-peritoneal in 38 out of 41 cases, where a *post-mortem* examination was made; there can be little doubt, in fact, that in the fatal cases

* 'On Uterine Hæmatocele,' *Ed. Med. Journ.* Nov. 1862.

the effusion is far more frequently intra-peritoneal; but this does not of course imply an absolute numerical preponderancy for the intra-peritoneal cases.

Dr. Savage,* to whose careful and beautifully illustrated work on the female generative organs the profession is much indebted, observes: 'Viewing the fixed relations of the pelvic peritoneum 'which so far as is known are disturbed only through the slow disin-'tegrating process attending the formation of matter, a subperito-'neal hæmatoma of large size would appear an impossibility.' But it appears to me that the facts known to us in relation to the rapidly occurring, very considerable infiltrations, which are witnessed in the first stage of certain cases of pelvic cellulitis, before there has been any change of a disintegrating character, sufficiently show that these pelvic peritoneal structures do not offer material obstruction to the occurrence of large effusions beneath them. The non-fatal tendency of the extra-peritoneal hæmorrhages put it out of our power to adduce *post-mortem* data, comparable in number to the other class of cases when the hæmorrhage is undoubtedly intra-peritoneal.

Lastly, clinical facts show that a tumour originally seated in the broad ligament or elsewhere may burst into the peritoneum, and secondary hæmorrhage of very serious import may thus occur.

Apoplexy and Rupture of the Ovary.—Under this head may be included some few cases of peri-uterine hæmatocele. Collections of blood may be formed in the substance of the ovary, probably seated, as a rule, in an enlarged Graafian follicle, and constituting a sort of hæmatic cyst. This cyst may become ruptured, and blood extravasated into the peritoneal cavity. The formation of these hæmatic cysts in the first instance is involved in obscurity, but the explanation of their formation is probably the following: A Graafian follicle does not burst, as it should do, into the Fallopian tube: hæmorrhage takes place within it; it enlarges from continuance of the bleeding, and rupture occurs. I have occasionally found Graafian follicles pathologically increased in size, and containing very large clots. In certain blood diseases, hæmatic cysts of the ovary thus formed may probably attain a considerable size.

Hæmorrhage during Menstruation from the Graafian Follicle into the Peritoneal Cavity.—This class of cases is one of great

* *Op. cit.* Plate vi.

interest. Normally, a certain amount of hæmorrhage — the 'menstruation of the follicle,' as Dr. Tyler Smith has termed it —occurs before the dehiscence takes place. The transfer of the ovule from the cavity of the follicle to the canal of the Fallopian tube is attended probably with discharge also of some of the blood from the follicle into the tube. After dehiscence has occurred we find a coagulum of blood in the ruptured Graafian follicle—a coagulum ordinarily the size of a nut. Now it is evident that a derangement or disturbance of this physiological process may give rise to hæmorrhage into the peritoneal cavity. If the tube be not accurately applied to the follicle, the blood and ovule together may escape into the abdominal cavity—when the ovule has been fecundated such an accident may result, as the occurrence of cases of extra-uterine pregnancy proves—and if blood continue to be poured out from the interior of the follicle, the blood must either distend the follicle itself or escape into the peritoneal cavity. We have no means of knowing what is the normal amount of secretion of blood from the interior of the follicle. It has been ordinarily assumed that the quantity is trifling. There is, however, no proof of this; and indeed there are very good reasons for believing, with Gallard, that ordinarily a not inconsiderable portion of the menstrual discharge itself is derived from the follicle,* which latter, as is rendered probable from the researches of Rouget, remains closely grasped by the fimbriæ during the whole period of menstruation. If this latter opinion be correct, it will be evident that, if from any accident the normal path for the follicular hæmorrhage—that is, the Fallopian tube—be not available, intra-peritoneal hæmorrhage will result. If the condition of the blood be such as to favour hæmorrhage—as in fevers, anæmia, chlorosis, purpura, &c.—the effects of such an accident are intensified.

The peri-uterine hæmatocele due to this case would be intra-peritoneal. The formation of an hæmatic ovarian cyst might precede the abdominal hæmorrhage.

Hæmorrhage from the Uterus and Fallopian Tubes into the Peritoneal Cavity.—When the menstrual product is prevented escaping by the normal outlet, by congenital absence of such outlet, or by acquired stricture or closure of the same, reflux of the blood may occur through the Fallopian tubes into the peritoneal cavity, and formation of a peri-uterine hæmatocele. This

* See a memoir by Gallard, *Arch. Gén. de Méd.* Oct. Nov. and Dec. 1860.

is a class of cases in the illustration of which very considerable labour has been bestowed by Bernutz, in the work previously alluded to.

Whatever may lead to menstrual retention may end in pelvic hæmorrhage. In the congenital cases of this kind the menstrual retention is associated with atresia of the cervix uteri, with absence of the vagina, or with imperforate hymen. In women who have menstruated, menstrual retention may occur from chronic inflammation of the cervix uteri closing the os uteri, or materially narrowing it; from traumatic influences during parturition, or otherwise; from cancer, &c. And there may be menstrual retention in cases where a slight menstrual discharge is apparently going on; the secretion of blood in the uterus may be so great that the os uteri is too small to allow of its escape. Hæmorrhage into the peritoneal cavity from the uterus and Fallopian tubes, one or both, may thus arise, either in connection with profuse menstruation or after parturition or after abortion.

More commonly the peri-uterine hæmatocele originates at a menstrual period, the hæmorrhage being preceded by suppression or by profuse menstruation; it has almost always been noted that menstruation was previously irregular. There may or there may not be, concurrently with the internal hæmorrhage, an external one.

Rupture of the Fœtus-containing Cyst in Extra-uterine Pregnancy.—The symptoms produced by the hæmorrhage which occurs under these circumstances are generally very severe. The blood is effused into the peritoneal cavity, often in great quantity.

The physical characters of the tumour produced by the effused blood resemble those observed in other cases. Frequently death occurs before the tumour has become developed and distinct. This rupture is most liable to occur when the fœtus is contained in the Fallopian tubes, and most frequently the accident happens between the second and fourth month under such circumstances.

Rupture of the gravid uterus itself is one of the causes of intra-peritoneal hæmorrhage, though such an accident properly belongs to obstetrics proper. The blood found in the peritoneum would naturally collect in the retro-uterine pouch under such circumstances.

Rupture of Hæmorrhoidal Veins.—Professor Simpson mentions

a case,* in which a considerable tumour situated between the vagina and rectum consisted of a coagulum—the result of hæmorrhage from one of the hæmorrhoidal vessels.

Hæmorrhage from Vessels of the Peritoneum and other sources.—Bernutz † describes a form of hæmatocele resulting from hæmorrhagic pelvi-peritonitis. Ferber,‡ Virchow, Rockwitz, and Schroeder § have, in reference to the general etiology of hæmatocele, drawn attention to the possibility of hæmorrhage occurring from the capillaries formed in the false membranes covering the pelvic viscera, the false membranes being the result of local inflammatory action. This hæmorrhage is analogous to that observed by Virchow in hæmatoma of the dura mater, in which case the blood is effused between successive layers of inflammatory membrane.

Here also may be mentioned the rare accident, *bursting of an aneurism* into the abdomen, the coagulum from which might be so situated as to give the physical characters of a peri-uterine hæmatocele.

Also, cases of the kind to which Dr. M'Clintock has drawn attention, and which, so far as at present known, are very rare, viz., the effusion of blood into the tissue of the uterus itself: the cervix uteri is the part affected. These cases occur only during, or immediately after, parturition.

Constitutional Causes of Peri-uterine Hæmatocele.—Any condition of the system at large favouring the production of hæmorrhage may alone, or concurrently with some one of the causes already mentioned, give rise to peri-uterine hæmorrhage. The presence of fevers, small-pox, &c., has in some recorded cases been associated with peri-uterine hæmatocele, the menstrual function becoming thus disturbed or disarranged in its performance. A watery condition of the blood, such as is present in anæmic individuals, chlorosis, purpura, or other blood disorders which may be considered as predisposing to the occurrence of hæmorrhage at a menstrual period, may, in the manner previously pointed out, be the cause of the peri-uterine hæmorrhage. Trousseau termed cases of this kind 'cachectic' hæmatoceles.

Results.—Some points in the subsequent history of cases of peri-uterine hæmatocele require notice. Absorption of the coagu-

* 'On Pelvic Hæmatoma,' *Med. Times and Gaz.* vol. ii. 1859.
† *Op. cit.*
‡ *Arch. f. Hsilk.* 1862, No. 5. p. 431.
§ *New Syd. Soc. Year Book.* 1869–70. p. 378.

lum is the most common event, and this is the most favourable termination. In some cases the blood tumour bursts into adjacent viscera. The bowel is the outlet most commonly chosen, and the syrupy contents of the cavity then escape by stool, or flesh-like masses are passed in this manner from time to time, the tumour diminishing in size as this goes on. The tumour may burst into the vagina. It may burst also into the peritoneum, having been primarily either entirely extra-peritoneal, or else encysted in the peritoneal cavity. This latter termination is the most unfavourable, and it occurs more particularly in those cases where there is a recurrence of hæmorrhage.

DIAGNOSIS.

In cases of peri-uterine hæmatocele, a defined tumour, or a hardness, resistance, and dulness not well defined, may be found to extend upwards a variable distance above the brim of the pelvis. It may reach beyond the umbilicus. There is in such cases an effusion of blood, and this blood, at first fluid, afterwards coagulated, forms the intumescence. The history of such cases is peculiar, the formation of the swelling occurs quickly, is attended with alarming faintness and prostration, and with an assemblage of symptoms which have been already alluded to (see chapter on Menorrhagia). The physical characters of the tumour vary according to the stage at which the observation is made. Retention of urine, which may be produced by the condition in question, might possibly mask the true nature of the case; the distension of the bladder might, under such circumstances, disguise the other swelling.

One form of ovarian disease might be confounded with peri-uterine hæmatocele; thus, in one of an interesting series of cases, related by Dr. M'Clintock, the tumour due to the hæmatocele was for a time considered to be an ovarian tumour, into which hæmorrhage had occurred. The principal points to be borne in mind in the diagnosis of tumours suspected to be due to hæmatocele are, the sudden occurrence of the swelling, the previous occurrence of marked menstrual disturbance of some kind, and the peculiar feel communicated by the tumour. The preceding menstrual symptoms are the least constantly significative.

In cases where peri-uterine hæmatocele is suspected, a vaginal examination should be made. The distinction of the various causes of peri-uterine hæmatocele must be gathered from what

has been stated as to the pathology of this condition. The distinction of cases in which the effusion of blood is due to rupture of the walls of the containing cyst in extra-uterine pregnancy (tubal or abdominal), from cases of hæmatocele unconnected with gestation, is difficult. Unless the pregnancy have advanced beyond the third or fourth month, pregnancy may have been unsuspected at the time of the appearance of the tumour, and it would be exceedingly difficult to say, in the absence of a definite history, what is the precise nature of the case.

The diagnosis of peri-uterine hæmatocele is not easy in all cases. Some important points in reference to the subject were brought out in a recent discussion on the subject at a meeting of the Obstetrical Society,* when the frequency of the affection was disputed. It is, as already stated, difficult to affirm absolutely that a particular case is one of hæmatocele at all, when the patient recovers, but it appears that the affection is not very rare in a comparatively mild form.

Out of the 1205 cases observed by myself at University College Hospital the affection was diagnosticated in 11 instances. Some of these were severe cases and life was threatened, but they all recovered. The details of these 11 cases I hope to publish as soon as opportunity admits.

TREATMENT.

When death occurs, it takes place usually either from hæmorrhage and collapse, or from peritoneal inflammation; the indications are, to arrest the hæmorrhage, to prevent inflammation, and, in certain cases, to promote external evacuation of the exuded products.

First, as regards the hæmorrhage. If the arrest of hæmorrhage be the chief indication, which will be judged of by the intensely pallid and faint state of the patient, our object should be to promote coagulation of blood already effused, and to check the flow of blood to the pelvic organs. One of the most important elements in the treatment, then, should be the observance of absolute rest in the horizontal position, not only during the attack itself, but between and during the succeeding menstrual period. Application of cold by means of bladders containing ice, placed over the pubes and the lower part of the abdomen, is of essential service. As a further help, the injection of iced water into the rectum might be

* See paper by Dr. Meadows, and reply by Dr. Barnes, in *Obst. Trans.* vol. xiii.

suggested. The administration of food and drink requires careful consideration. If the patient were previously anæmic, or if there were reason to believe that the hæmorrhage was produced or kept up by the watery or vitiated character of the circulating fluid, a more liberal diet would be necessary; but under other circumstances, and during the acute stage, food and drink should be moderate in amount. For the relief of the great prostration and collapse present in many cases, brandy or other stimulants should be liberally administered. Internal remedies—hæmostatics, as they are termed—are of assistance in checking the hæmorrhage under these circumstances; iron, ergot, sulphuric acid, are preferable.

The question as to the propriety of puncturing the tumour is one on which some difference of opinion exists; some practitioners advocating it, while others reject it, or limit it to those cases in which the effusion is not intra-peritoneal at all. As a rule, it is better to interfere surgically as little as possible, for, by making a puncture, there is risk of giving rise to inflammation of the interior of the sac, to purulent infection, and the fatal consequences of the same. Trousseau,* in an admirable clinical lecture on this subject, expresses himself as opposed to puncture. Professor Braun, of Vienna, states that in six cases where puncture and evacuation of the sac was performed, cure followed. In three cases he adopted a passive treatment, with like success.

Sir J. Y. Simpson recommends that an opening should be made, if the tumour be enlarging from inflammation or otherwise. Nélaton and Voisin limit surgical interference to cases where there is violent pain with increase in size, and threatened rupture into the peritoneal cavity.

The view taken of this question by Dr. Matthews Duncan is to the following effect: If the blood remain in form of clot, it is likely to be absorbed, and in such a case puncture is not required. When liquefaction occurs, Dr. Duncan believes that the blood becomes mixed with pus and is almost sure to be discharged, and in these cases operative interference may be required. The practitioner has then to determine whether he will leave the case to nature, or interfere; in some cases, it is often good practice to open the sac, in others it is the only good practice. The operation is undertaken to avert a threatened rupture, or with the view of shortening and assuaging the sufferings of the patient. Dr. M'Clintock, who has had a considerable number of cases under his

* *L'Union Méd.* Dec. 1861.

care, says: 'With my present impressions, I would not be inclined 'to resort to the trochar, unless urgent symptoms were manifested 'in consequence of the bulk or mechanical pressure of the tumour; 'and not even then, unless it were in the chronic stage.'* More recently the question for and against puncture was discussed at the Obstetrical Society,† Dr. Meadows, Dr. Barnes, and others, taking part in the debate. In my own cases I have not once employed puncture, though in one case I was on the point of doing so. It appears on the whole, that a puncture carefully made, and so as to avoid risk of introduction of air, would, in a severe case, shorten the duration of the malady, but as a general rule I am certainly decidedly opposed to puncture.

The difficulties of the operation are often not inconsiderable, and great care is required not to wound the bladder or other viscera. A sound should be passed into the bladder previously, in order to render evident the relation of this viscus to the tumour. In operating, the point which projects most into the vagina, and as nearly in the middle line as the nature of the case admits, should be chosen. The first opening made should be small, but when it is perfectly certain that the cavity is reached it should be enlarged. A large opening is necessary, to allow of escape of clots. Care should be taken to prevent access of air to the cavity, and slight pressure should be afterwards continuously applied over the abdomen. If pyæmic symptoms supervene, they must be treated by copious use of stimulants, by bark, ammonia, &c. Injection of the cyst with water is not to be recommended, unless the discharge has become putrescent.

With respect to those cases where the effusion extends high up into the abdomen, it may be a question whether to perform an abdominal operation or not. In a case related by Dr. Duncan, paracentesis was performed, and the patient recovered. Such an operation is only admissible in exceptional cases, and where the tumour is very large.

Next, with reference to the peritonitis. The great pain present in these cases is of itself an evil, and it must be treated by exhibition of opium in sufficiently large doses. The most appropriate anti-inflammatory remedies, supposing such to be used, would seem to be local depletion by means of the application of leeches over the hypogastrium; such local depletion will also lessen the internal effusion of blood. Poultices and warmth, so useful in

* *Op. cit.* p. 271.

† *Obst. Trans.* vol. xiii.

ordinary peritonitis, would seem absolutely contra-indicated, inasmuch as the hæmorrhage would be probably increased by their use.

The subsequent management of the patient will require caution. Everything calculated to give rise to excitement or congestion of the genital organs must be avoided. The patient must be enjoined not to take excessive exercise, to live moderately, but well. The anæmic condition of the patient generally indicates the employment of tonics, of ferruginous preparations, &c., care being taken, while restoring the strength of the patient, to prevent premature exercise of this strength. Sexual intercourse could not with propriety be allowed until after the lapse of some months at least. A patient who has once been the subject of peri-uterine hæmatocele requires continuous and careful watching for a considerable period; exertion of any kind, however slight in degree, may induce recurrence of the mischief, if undertaken too early. I have witnessed one case, that of an hospital patient, who was the subject of the affection three times, at intervals tolerably widely separated.

CHAPTER XXII.

PELVIC CELLULITIS AND ABSCESS.

Peri-uterine Inflammation; its Frequency, Nature, and Seat—Progress and Route taken by the Effused Products—Symptoms and Effects of Pelvic Cellulitis.

Diagnosis.

Table of Cases.

Treatment.—Great necessity for Rest—Medicines—Diet—Evacuation of the Abscess.

The affection now to be considered is of great importance and interest. It is an affection, moreover, which may be said to be peculiar to the female sex. It is an insidious disease not unfrequently masked or unrecognised until an advanced period of its progress, and its consequences are frequently in the highest sense of the word serious.

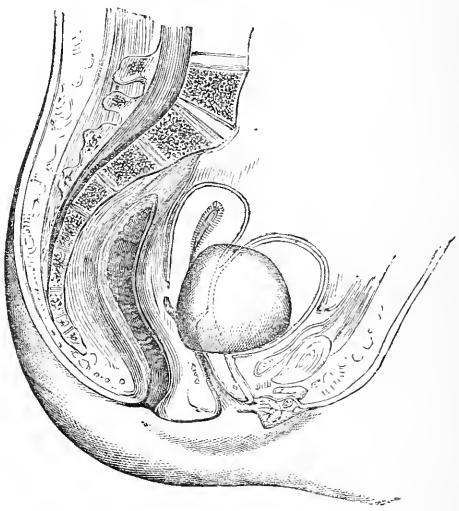
In its essence it consists of effusion of morbid products into the space surrounding the uterus and ovaries, and the transformations undergone by these effused matters, one of which transformations is the conversion of the products in question into a purulent or puriform fluid. Tumours of varying shapes and consistence are found in the progress of the affection situated generally not far from the uterus and interposed between it and one side or other of the pelvic wall. These tumours appear rapidly, remain generally for a considerable time, and disappear either owing to gradual absorption of the material of which they are composed, or by liquefaction and bursting of the tumour at the surface of the skin, into the peritoneal cavity, intestines or bladder.

The effusion appears to be the result of the introduction of an irritant from without. It is frequently witnessed during the puerperal state, after delivery at term, or after miscarriages; it may result from operations on the internal or external generative organs, from the introduction of a tent into the uterine cervix, or from the performance of a severe operation, such as ovariotomy, or from a simple operation such as the removal of condylomata from the labia. It can hardly be said to be known as an idiopathic affection.

The actual seat of the effusion is, in most cases, the meshes of the cellular tissue surrounding the uterus, between the folds of the broad ligament, and extending thence in various directions towards the pelvic walls; but it is probable that in some cases of pelvic inflammation there is an inflammatory condition of the peritoneum itself.

In figs. 97 and 98 are represented the general relations of the tumour produced by the effusion. Another instance of the same kind is depicted in figs. 23 and 24, representing respectively the lateral and anterior view of the outline of the tumour in a case of pelvic cellulitis.

Fig. 97.*

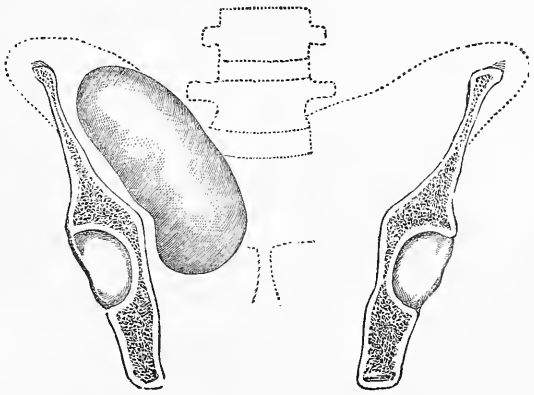


Bernutz and Goupil, who take a somewhat different view of the question of pelvic inflammation from that held in this country, have brought forward many very valuable facts, which prove that inflammation, abscess, &c., of the peritoneum covering the ovarian pouch, and the fimbriæ of the Fallopian tubes—termed by them pelvi-peritonitis—is much more common than was believed to be the case; that in addition to puerperal causes, menstrual derangements of various kinds, blenorrhagia, venereal excesses, and traumatic causes, may lead to inflammation and purulent collections

* Fig. 97 shows outline of the effusion (to the right of the uterus) in a case in University College Hospital.

in the locality in question; and they endeavour to draw a parallel between the phenomena witnessed in the male—orchitis and hydrocele—and these inflammatory conditions of the peritoneum surrounding the extremities of the Fallopian tubes and ovaries. They argue for an almost exclusively intra-peritoneal seat of the inflammation, the argument pursued being the same as in reference to the seat of the hæmorrhage in peri-uterine hæmatocele. With acute peritonitis of the pelvic cavity as the result of injuries of the generative organs during delivery, after operations, &c., we have been long familiar, but these authors endeavour to show that this peritonitis, now acute, now chronic, occurs in connection with diseases of the womb, Fallopian tubes, &c., to a greater extent than was before suspected. In many of the cases which

Fig. 98.*



are described by Bernutz and Goupil as cases of pelvi-peritonitis there seems to be sufficient evidence of the existence of effusion into the connective tissue beneath the peritoneum. My own experience has convinced me that the phenomena observed in various cases are only to be reconciled with the theory that the effusion is really sub-peritoneal, although in some instances there has been evidence of the peritoneal surface being also in an abnormal state.

The effusion has been described by Dr. West as an 'acute purulent œdema.' The term 'purulent' is not quite correct in all cases, the effusion sometimes undergoing absorption. Virchow,†

* Fig. 98 represents the outline of the effusion as imagined to be seen from the front. From the same case as that of fig. 97.

† Virchow's *Archiv*, 1862, p. 415.

who has specially examined the effused products, describes it under the term 'diffuse puerperal metritis and parametritis;' the tissues become swollen, thickened, hardened, and œdematous, and a fluid, first transparent, then opaque, exudes on section. The cells are enlarged, their contents thicker; they split up, and groups of smaller roundish granular cells are seen. As further consequences, there may occur coagulation and obstruction in the lymphatics there situated, and metamorphosis into purulent fluid.

The effusion is remarkable for its hardness (a physical quality to which sufficient attention has hardly been directed) under ordinary circumstances. The hardness and rounded character of the tumour perceived through the vaginal or abdominal wall is often such as to give the idea of a more permanent growth. This hardness is not perceived at first, but at a later period, and it may be absent when liquefaction of the effused products occurs and the stage of 'abscess' has arrived.

Once started, the affection may spread to a considerable distance in the pelvis, and even beyond it. The spread of the effusion follows, however, certain definite paths, the fasciæ of the pelvis being so arranged that extension necessarily occurs in these definite directions. König* gives the result of some interesting experiments on this subject, made on bodies of women dying after labour. Injections of air or water were made into the cellular tissue under the broad ligament. The results were: 1. Exudation into the cellular tissue in the neighbourhood of the tubes and ovary travels primarily along the course of the psoas and iliacus muscles, and then travels into the pelvis proper. 2. Exudations starting from the antero-lateral part of the cellular tissue, where the body of the uterus joins the cervix, fill first the cellular tissue of the true pelvis laterally, to uterus and bladder, and pass then with the round ligament towards Poupart's ligament, and thence to the iliac fossa externally and backwards. 3. Starting from the posterior part of the base of the lateral ligament, the parts first filled are the posterior and lateral parts of the pelvis, viz. the Douglas fossa; and the exudation then follows the course of those described under head 1. The effusion may, as I have myself observed, pass also out of the pelvis through the large or small sacro-sciatic notch. It may also pass across the pelvis in front of the bladder from one side to the other, and once above the pelvic

* *Archiv f. Heilkunde*, 1862, No. 6, p. 481.

brim, it may extend to a very considerable distance upwards, dissecting the peritoneum away from the abdominal fascia, and inserting itself between.

In Dr. Matthews Duncan's late valuable work,* which contains a very exhaustive criticism on the whole subject, the terms perimetritis and parametritis are recommended for adoption, the first being intended to include inflammatory lesions within the peritoneum; the second, those occurring in the cellular tissue. There are very good reasons for adopting the nosology recommended by Dr. Duncan, but the term pelvic cellulitis, nevertheless, seems to me to be the more convenient one, considering, as I do, that it is a correct definition of by far the larger number of cases.

The *history* of cases of pelvic cellulitis, of which those following delivery may be taken as typical ones, is generally characteristic. Rigors, pain more or less intense, quick pulse, irritative fever, mark the onset of the inflammatory action; but these initial symptoms may be absent, the patient gradually becoming indisposed, without occurrence of acute symptoms of any kind. Thus it is not uncommon for a patient, who may have got over the period of lying-in tolerably well, to evince three or four weeks later symptoms of general indisposition; she becomes weaker and weaker; she is emaciated, complains of pain down the legs, or in the pelvis; the appetite and digestion fail; there are occasional chills; and after these symptoms have lasted a week or two, the more decided pelvic symptoms—difficulty and pain in defæcation and micturition—are evident. If movement be attempted, pain is produced, but this is often taken to be due to mere weakness, the real mischief being overlooked. A quick pulse is, however, always present from the beginning. When we are called to the case at a somewhat later period, we find usually that there has been a good deal of pelvic pain and uneasiness, pain and difficulty in micturition and defæcation, high fever, with evening exacerbations, night sweats, hectic, diarrhœa, and all the signs of violent and dangerous constitutional disturbance; and the presence of the tumour now alluded to is perhaps the last thing which is detected, the patient's condition having previously excited great uneasiness on the part of the attendant. These symptoms may, however, be absent. The tenderness present may prevent the recognition of a tumour, but when it can be felt, the tumour is generally painful to the touch; the vaginal wall covering it is thickened, indurated,

* *On Parametritis and Perimetritis.* Edin., 1869.

and conveying a very different impression from that which is present when a tumour of another kind simply presses on the vaginal wall, and is not connected to it by inflammatory exudation, &c.; the vaginal canal is hot, dry, and tender to the touch, usually at least; at the latter stage of the affection this tenderness may be absent, or at all events be much diminished. The hardness of the tumour has been already alluded to as a remarkable feature. In a later period it gives place to softness and fluctuation when undergoing liquefaction. Softness does not, according to my experience, precede resolution.

Neuralgic pains are frequently present, due to pressure of the effused products on the nerves passing through the pelvis. These neuralgic symptoms vary; they are either a sensation of coldness, or increased warmth of the surfaces to which the nerve leads, an intense pain, or other altered sensation. König observes truly, that the external cutaneous nerve of the thigh is the one most frequently affected; at other times the crural nerve chiefly, or the sciatic nerve. One symptom is very frequently present, viz. flexion of the thigh on the trunk; the patient experiences pain when the thigh is extended, owing to the distension present around the psoas muscle, and which is necessarily increased by extension. The sign in question is almost pathognomonic of pelvic cellulitis or abscess. Pelvic cellulitis may, however, be present unaccompanied by this symptom, for when the mischief is in the anterior part of the pelvis, or in such a position as to be out of the way of the psoas and iliacus muscle, it may be found wanting. This distinction I have been able to make in several instances.

Other symptoms attendant on pelvic cellulitis and abscess are —vesical catarrh, indicative of proximity to the bladder; rectal disorders; passage of bloody mucus and tenesmus; anomalies of defæcation and micturition, these functions being generally more or less interfered with.

When liquefaction occurs, the abscess resulting becomes evacuated. The most frequent outlet is the rectum, next in order of frequency the vagina, and next the bladder; but the abscess may open above Poupart's ligament, in the groin, or in the genital or in the lumbar region. The opening into the peritoneum is very rare. The evacuation of the abscess is usually attended with immediately favourable effects, unless the opening be of a sinuous character, in which case the duration of the disease is often considerable.

The following statistics as to the results observed may be interesting:—Dr. M'Clintock found that in 70 cases of pelvic cellulitis, of puerperal origin, the case ended thus:—37 ended in suppuration with discharge of pus; 24 of these burst or were opened externally, viz., 20 in the iliac region, 2 above the pubes, 1 in the inguinal region, and 1 beside the anus; 6 were discharged *per vaginam*, 5 by the anus, and 2 burst in the bladder. In not one of these puerperal cases did the abscess burst into the peritoneal cavity, while this result was several times observed in a much smaller number of non-puerperal cases. Dr. West states that, in 34 out of 52 cases, the broad ligament was the seat of mischief, the cellular tissue between the uterus and rectum in 14 cases, and that between the uterus and bladder in 3 cases. Pus was discharged externally in 27 of these 52 cases.

Peritoneal Serous Cyst.—Dr. Matthews Duncan* has called attention to certain interesting cases in which large accumulations of a serous fluid have been found behind the uterus, resulting probably from local peritonitis (perimetritis). The cavity enclosing the fluid is supposed to be separated from the general peritoneal cavity by adhesions. In one case as much as eight ounces, in another nine, were drawn off by a trochar, the perforation being made at the back of the vagina. Dr. Duncan contends that the supposed cures of ovarian dropsy after rupture of the cyst into the abdomen are probably cases of this kind. There are difficulties in accepting the latter explanation, the magnitude of the tumour in some of the cases of ovarian cyst rupture being infinitely greater than any case Dr. Duncan brings forward of peritoneal serous cyst. It must be borne in mind also that in none of Dr. Duncan's cases was a post-mortem examination made, and it is, therefore, not absolutely certain that the fluid obtained by operation was not in the Fallopian tube or in a cyst of the broad ligament. It is right to state this, although the cases described by Dr. Duncan appear to have been of the nature he attributes to them.

DIAGNOSIS.

Some remarks on this subject will be found in the chapter on the 'Diagnosis of Pelvic Tumours from the Vagina' (p. 105).

When an enlargement at the lower part of the abdomen is observed in a woman who has been delivered recently, who has

* *Opus jam cit.* p. 88.

recently had an abortion, or who has been the subject of an operation involving the generative organs, the formation and development of the tumour having been attended with inflammatory symptoms, tenderness, feverishness, &c., the existence of pelvic abscess is to be suspected.

The diagnosis of pelvic cellulitis and abscess is usually easy. The tumour forms in the pelvis, it may rise above this cavity, and be perceivable in one or other groin, or even considerably higher; or it may form a tumour, rising in the middle line above the pubes. Its limitation is made by palpation and by percussion. The skin covering the tumour may become red and inflamed, when evacuation of the abscess is to occur through the abdominal wall. The abscess may, however, burst into the vagina, or into the bladder, rectum, &c.

In the diagnosis of the tumour, Dr. M'Clintock, attaching, and most justly, much importance to its early recognition, advises that the iliac regions be carefully and daily examined by the hand, in all cases of convalescence after uterine inflammation, or when the patient had been subjected to the operation of causes tending to produce pelvic abscess.* A persistent hardness and swelling in one of the iliac regions, unconnected with the uterus or ovary, with more or less tenderness on pressure, continuous uneasiness, and presence of febrile symptoms, should excite suspicion.†

There are other conditions capable of giving rise to abscess, which abscess may present at some portion of the abdominal wall, above the groin, or in the middle of the abdomen. In some rare instances these conditions might be confounded with pelvic abscesses of the more ordinary kind.

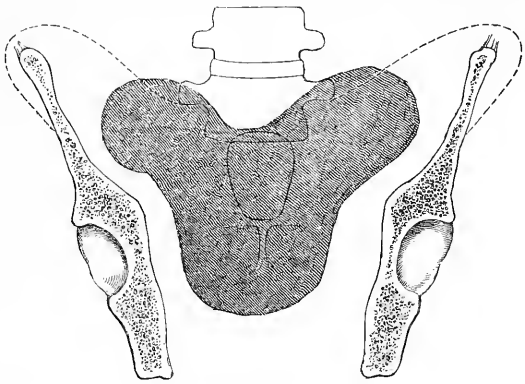
Abscess in the iliac region may be due to caries of the vertebral column; abscess above Poupart's ligament on the right side may be due to inflammation or obstruction of the appendix vermiformis. In cases of retained encysted fœtus, suppuration, formation of abscess, and spontaneous discharge of the contents through the abdominal wall, are frequently observed. In this latter event there would be a history of peculiar character. Ovarian tumours sometimes suppurate, and the resulting abscess opens externally.

The condition with which ordinary pelvic abscess is more likely to be confounded, is peri-uterine hæmatocele. The two accom-

* *Op. cit.* † M'Clintock, *op. cit.* p. 49.

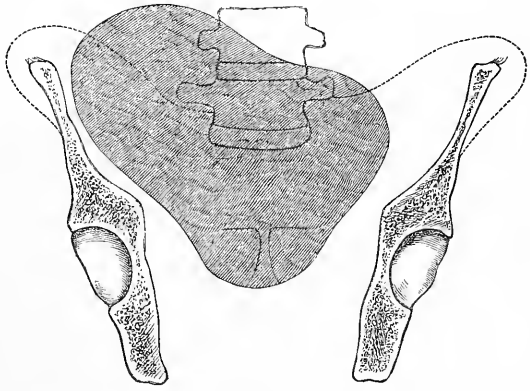
panying figures exhibit the similarity of outline of the tumour in the two cases. Fig. 99 represents the shape of the abdominal

Fig. 99.



tumour in a case of peri-uterine hæmatocele.* Fig. 100 gives an idea of the tumour in a case of pelvic cellulitis.† The resem-

Fig. 100.



blance between the two as regards the configuration of the tumour is obvious. [The *lateral* aspect of the tumour in these two cases

* Case of Owen, Univ. Coll. Hospital, 1866.

† Case of Parnell, Univ. Coll. Hospital, 1866.

respectively is shown in figs. 22 and 23.] In both the tumour rises from below, and in both cases the margin of the tumour is rounded, generally rising higher on one side, presenting variations in hardness and resistance, or softness and fluctuation, according to the stage of the affection. And it now and then happens that the contents of the hæmatocele undergo a process of suppuration, the hæmatocele becoming converted into an abscess.

The tumour due to peri-uterine hæmatocele forms rapidly, that due to pelvic cellulitis slowly: this is the principal distinction.

The following is a Tabular Statement relating to 32 *Cases of* Pelvic Cellulitis, *observed at University College Hospital, from August,* 1865, *to December,* 1869.

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
17	E. A.	S.		Following operation for removal of condylomata. In-patient.
18	C. A.	M.		Pelvic cellulitis and menorrhagia. In-patient.
21	E. D.	M.	1	5 weeks after labour.
22	E. B.	M.	1	8 months since labour.
22	E. C.	M.	1	In-patient.
22	Mrs. P.	M.	1	6 weeks after labour.
23	E. P.	M.	2	7 months since last labour. In-patient.
23	Mrs. A.	M.	3	5 months after labour.
24	S. W.	M.	3	Pelvic cellulitis and abscess. In-patient.
25	E. B.	M.	1	Abscess near rectum. Last child 2 years ago.
26	M. H. S.	M.	5	1 month since labour. In-patient.
26	Mrs. M.	M.	4	Labour 6 weeks ago. Peri-metritis.
26	E. P.	M.	1	Chronic case. Was in-patient 3 years ago for same affection.
26	Mrs. M.	M.	1	6 weeks since labour. First stage of inflammation.
27	C. R.	M.	1	Menorrhagia of late. First stage of pelvic cellulitis.
27	M. D.	M.	5	Labour 4 months ago.
27	A. T.	M.	1	Threatened pelvic cellulitis.
27	M. P.	M.	1	In-patient.
28	Mrs. S.	M.	5	Last 3 weeks ago. Pelvic cellulitis, arrested in first stage.
29	S. G.	M.		In-patient.
29	E. B.	M.	4	In-patient.
30	M. D.	M.	3	Labour 10 weeks ago. Infiltration, size of 2 fists.
30	Mrs. P.	M.	1	Labour 2 months. Craniotomy.
31	L B.	M.	4	In-patient.
33	J. B.	M.	1	Pelvic cellulitis and abscess opening into rectum. In-patient.
33	F. C.	M.	4	8 weeks since labour.
33	J. V.	M.	4	Labour 2 months ago.
34	A. H.	M.	2	Last labour 8 years ago. Very large tumour. In-patient.
34	J. P.	M.	7	Last child $1\frac{3}{4}$ year. In-patient.
34	M. K.	M.	7	In-patient.
34	E. L.	M.	4	Labour 4 months ago.
36	Mrs. V.	M.	6	Labour 9 months ago.

TREATMENT.

Pelvic abscess most frequently comes before us as an effect or consequence of parturition, and there can be no doubt that the formation of post-puerperal abscesses in the pelvis is due to the same kind of influence—more limited in its operation—as that which proves fatal in so many cases of puerperal fever. Virchow considers the diffuse peri-metritic inflammation of puerperal women to be a sort of internal erysipelas. Dr. West considers that the analogies of the affection are 'to be found among those inflammations of the cellular tissue which, succeeding to operations, advance with great rapidity, and terminate soon in the formation of enormous quantities of matter.' This view of Dr. West's is undoubtedly correct, and the whole clinical history of pelvic abscess is corroborative of the fact that we have here to do with a local pyæmic action. In the worst forms of puerperal pelvic abscess the most vigorous stimulant treatment is absolutely necessary to save the patient from death, and the same holds good with abscesses the result of amputations, &c. It is reasonable to infer that, in milder forms of the affection, the same kind of treatment is best; and that this inference is a correct one practical experience has abundantly convinced me.

The general principles which should then guide us in the treatment of pelvic abscess may be deduced from the foregoing considerations. In the first stage of the affection, and before pus has formed, it may be advisable in a very few instances to apply a few leeches over the painful spot, which is generally in one or other of the iliac or inguinal regions. Leeches have in some cases been applied to the uterus itself. Neither leeches, nor indeed depletion of any kind, are indicated when the inflamed part has suppurated, or when the patient is in an anæmic state, or where the abscess follows on puerperal fever. Hot poultices to the lower part of the abdomen are of the greatest value; they should be large, thick, and spread over a large surface.

Mr. Hilton, in his admirable lectures, has forcibly called the attention of the profession to the beneficial influence of *rest* in the treatment of many surgical affections. Dr. M'Clintock* insists strongly on the great importance of rest in the treatment of pelvic abscess. It may be laid down that in all cases of pelvic abscess it is the best practice to see that the patient be kept in the recum-

* *Op. cit.*

bent posture for some considerable time. The cure of cases of pelvic abscess is often a very tedious affair; the pus burrows in the pelvic cavity beneath and between the different layers of fascia, and sometimes even, when the cavity of the abscess is very large, it exhibits no tendency to point or to undergo spontaneous evacuation. The termination of the case will be favoured by a due observance of rest.

In cases where the thigh is drawn up, I have employed a method of keeping the psoas and iliacus muscles at rest which has been attended with considerable advantage. This is to lay the whole of the lower extremity on a double inclined plane, with the heel elevated, somewhat after the manner in which a case of fracture of the thigh is treated.

The experience I have had of the treatment of pelvic cellulitis by mercury, induces me to express my disapproval of it as a general rule, although its use has been strongly recommended. In bad cases of pelvic abscess, mercury is most certainly inapplicable; the tolerance of mercury in milder cases is no proof of its efficacy as a curative agent, and, notwithstanding the high authority which can be given for the use of mercury in the treatment of pelvic abscess, I do not employ it, still less recommend its continuous administration. An exception in favour of mercury may be made in cases where there is syphilitic disease present. Thus in an hospital patient suffering from syphilis, condylomata, and pelvic abscess, consequent on removal of these condylomata, I employed mercury with advantage. The pain, sleeplessness, and general discomfort experienced by the patient, are best relieved by opium. A ready means of administering it is to throw a small quantity of laudanum into the rectum. The diarrhœa frequently present requires to be controlled by opiates together with astringents, of which latter catechu is perhaps the best.

The patient should be kept in a well-aired, moderately warm room. The pelvis and the body generally should be sponged night and morning with tepid water, care being taken not to chill the surface of the skin. A vaginal injection of tepid water once or twice a day gives great comfort, if carefully done.

The diet of the patient requires the most careful attention. From the first the patient should be fed well. Beef tea, soups, milk, eggs, according to the appetite, may be given in good quantity. Port wine or bottled porter is to be administered judiciously and with due regard to the digestive capabilities of the patient. It is impossible to say what quantity of food or stimulant may be

required; this must be a matter of experiment; when the abscess is discharging, large quantities will always be required, and in many cases, before the opening has occurred, it is necessary to put the patient on a very liberal diet indeed. Medicines which help her to take nourishment, such as cod-liver oil, dilute nitric acid, with bitter infusions, are often of service. Bark is a most valuable medicine in chronic cases. A liberal diet, rest, bark, and occasional small doses of opium—this is, in brief, the best treatment for the majority of cases which come before us. As long as any induration can be felt from the vagina or above the pubes, the patient cannot be pronounced convalescent, nor is it safe to allow her to resume her ordinary course of life.

The question as to the evacuation of the abscess is an important one. The natural evacuation is undoubtedly the best, unless this is procured at the expense of permanent disorganisation of the pelvic viscera; but it is certain that in many cases artificial evacuation hastens the cure very materially. The selection of the time and place for puncture—if early puncture be decided on—requires great judgment. If the abscess be opened from the vagina, extreme care is necessary to avoid wounding the pelvic viscera; a soft point may be chosen for the puncture, if there be no actual pointing of the abscess. Dr. M'Clintock believes that those cases end most favourably which are evacuated externally. Where the abscess points at some part of the abdominal wall, it is better to wait until the skin is thoroughly implicated. If a puncture be made from above, it should be made as near to the pelvic brim as possible, in order to avoid the peritoneum, and if the swelling extend far out towards the iliac region, the puncture should be made close to Poupart's ligament; to avoid the sheath of the crural vessels, the puncture should be made external to the surface of Poupart's ligament. Dr. Tyler Smith adopts a plan of opening the abscess in this situation, which has appeared to me to be successful in preventing introduction of air, viz. the making a valvular incision. The bistoury is the best instrument for the operation. When fluctuation is clearly evident, the operation is devoid of uncertainty, but under other circumstances there is risk of missing the abscess altogether. Unless, therefore, the position of the abscess be otherwise than by fluctuation distinctly indicated, it would be better to wait than to operate early, although by so waiting some time would be lost. When an abscess has been opened, warm linseed poultices form the best application; the escape of the pus should be allowed to occur *very slowly*, otherwise

there will be great risk of the introduction of air into the cavity, and obvious mischievous results therefrom; a compress of cotton wool should be lightly applied over the whole hypogastric region. The antiseptic treatment of Professor Lister should be in such cases carried out most religiously. These are especially the cases in which the beneficial results of exclusion of air are desirable.

Mercurial inunctions, recommended in chronic cases, appear objectionable. Painting the lower part of the abdomen with iodine appears sometimes of service where induration remains, and it is desirable to remove it. When the abscess burrows in the thigh, strapping of the thigh will prove useful, the foot and leg being previously bandaged.

CHAPTER XXIII.

FIBROID TUMOURS OF THE UTERUS, POLYPI OF THE UTERUS, AND FIBRO-CYSTIC TUMOURS OF THE UTERUS.

Fibroid Growths of the Uterus—General Remarks—Four varieties: 1. Sub-peritoneal or Peri-uterine; 2. Interstitial or Parietal; 3. Submucous Fibroid Tumours; 4. Fibrous Polypi—Progress of these Growths as a whole—Absorption—Cystic Transformation—Fibro-cystic Tumours—Illustrative Cases—Recurrent Fibroid Tumour—Symptoms produced by presence of Fibroid Uterine Growths—Glandular and Mucous Polypi.

Diagnosis.

Treatment.—Preventive—Removal by Surgical Procedures—Operations for Polypus: by Scissors, Knife, Écraseur, &c.—Operations when the growth is Intra-uterine—Polypoidal Tumours—Removal by Enucleation—Destruction by Partial Removal—Treatment of the Hæmorrhage they produce by Incision of the Cervix—Treatment of Interstitial and Sub-peritoneal Growths—Removal of Fibroid Tumours by Gastrotomy—Statistics of the Operation and of Extirpation of the entire Uterus—General and Palliative Treatment in cases of Fibrous Tumour of the Uterus—Internal Remedies.

It is necessary, from a pathological point of view, to consider together the fibroid tumours of the uterus and fibrous polypus of the uterus. Otherwise these different names express important practical differences between them. Every tumour of the uterus is not a fibroid tumour, nor is every polypus a fibroid polypus.

These fibroid growths are very important in the pathology of the female sexual organs. They often interfere mechanically with the uterine functions, cause difficulties in menstruation, pain, prevent impregnation, lead to miscarriages, and give rise to various minor inconveniences. They sometimes destroy the subjects of them.

Any part of the uterus may be the original seat of the affection. In their essence these fibroid growths have a structure like that of the uterus. They are, for the most part, rounded, well-defined masses, more or less isolated from the adjacent parts, but still preserving, when in an active state, a regular vascular connection with those parts. They are subject to decay, absorption, and various curious changes, and their period of activity is usually

limited to the period of sexual vigour. They are found equally in the single and the married, are more usually observed after the age of 25, but often remain up to an advanced age. The particular period of life in which these growths have been observed is that during which the uterus is in the highest degree functionally active. Scanzoni considers that the fibrous tumour of the uterus is most common between the ages of 35 and 45; but of eighty-seven cases tabulated by Dr. West, twenty-one cases occurred between the ages of 20 and 30. Out of ninety-six cases it was observed by myself in eight cases before the age of 26.

It is highly probable that the fibroid tumour of the uterus is very frequently present in cases where its existence is not suspected; for, in certain positions of these tumours, the symptoms are not such as to attract particular attention. For this reason, we may perhaps be justified in presuming that the frequency of the disease before the age of 30 is not indicated in most tables given on this subject. The statement of Bayle, to the effect that the fifth part of women above 35 years old are affected with fibrous tumour of the uterus, does not appear to be borne out by more recent pathological enquiries. The disease is of frequent occurrence undoubtedly, but the case is overstated by Bayle. Sometimes they occur singly; more often we meet with two or more in the same uterus.

The size of these growths varies from a pea to a mass large enough to occupy the whole abdominal cavity. In a case which I have related in the 'Obstetrical Transactions,'* the tumour, which grew from the uterus near the cervix, measured, when removed from the abdomen, 16 inches in diameter and 44 inches in circumference, and its weight was 42 lbs. The patient, who had been under the care of the late Dr. Uvedale West, of Alford, died almost suddenly, from an attack of hæmorrhage, at the age of 53, and the tumour had been growing for ten years.

In Walter's celebrated case the tumour weighed 71 lbs., and other still larger have been described.

Fibroid growths of the uterus are now divided, according to the accident of their position, into the following classes:—

a. Those growing from the exterior of the uterus by a pedicle, or sessile, as the case may be—*sub-peritoneal*.

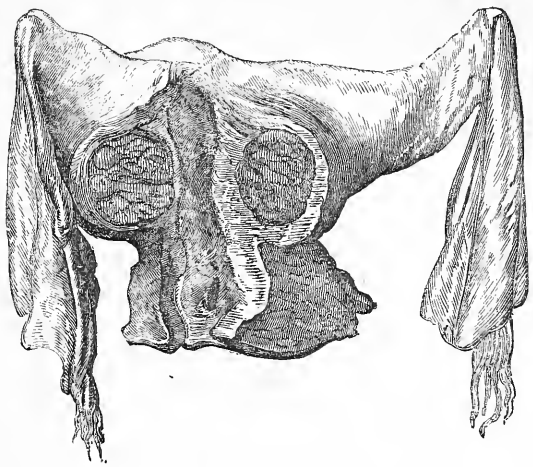
b. Those growing in the thickness of the uterine wall, covered on both sides by uterine tissue—*parietal* or *interstitial*.

* Vol. ii. p. 240.

c. Those growing from the internal wall, projecting more or less into the cavity—*sub-mucous.*

d. Those attached to and growing from the interior of the

Fig. 101.*



uterus, and connected to it by a narrower portion—the pedicle—*fibrous polypus.* Many of these cases have been at one time of their career sub-mucous fibroid tumours.

Each of these must be considered separately.

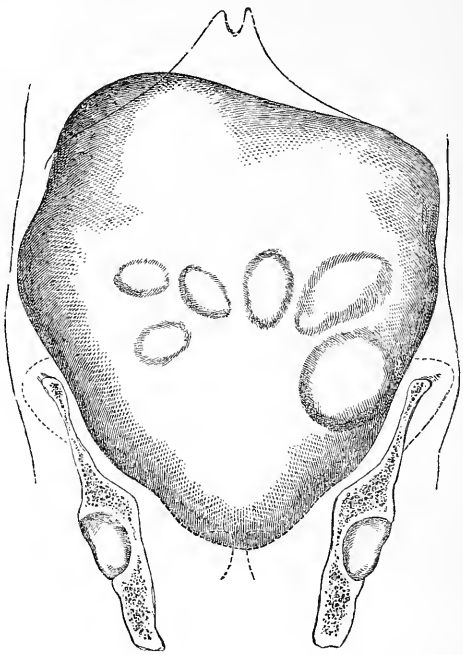
a. The Sub-peritoneal Fibroid Growths may originate at any part of the surface of the uterus, mostly from the upper part of the organ. Sometimes they originate quite low down on the part of the uterus designated as the cervix. These tumours attain a larger size than those situated in the wall of the uterus or within it; the very large specimens belong to it; they are attached by a broad or narrow portion. The pedicle is often of considerable length, and corresponding tenuity, and the tumour then hangs freely in the abdominal or pelvic cavity. If the tumour is broadly attached to the uterus, this organ generally increases much in size, but if the pedicle is narrow, such is not the case. In the very large tumour (41 lbs.) previously alluded to, the uterus was quite atrophied. We often see more than one sub-peritoneal tumour in the same patient.

A very curious feature in the history of these sub-peritoneal

* Fig. 101 represents a small fibroid tumour growing in the uterine wall. From a preparation in University College Museum.

tumours is that the pedicle is sometimes torn across, and the mass entirely separated from the uterus, while the tumour itself

Fig. 102.*



becomes fixed to and grows on some other part of the peritoneal surface. This transplantation of fibroid tumours has been observed in several cases: it appears to be produced by the tumour becoming adherent elsewhere; the pedicle becomes stretched in consequence of the motions of the uterus and intestines, and finally gives way.

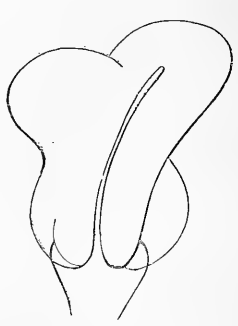
Here it must be mentioned that fibroid growths are sometimes found connected with the peritoneum in the vicinity of the uterus which have an origin independent of the uterus altogether. These must not be confounded with transplanted fibroid tumours of the uterus. It appears that growths in no way distinguishable by their microscopic characters from uterine fibroid tumours may originate in the position above indicated. Sir James Paget observes that they are probably limited to those parts in which

* By way of contrast to fig. 101, fig. 102 shows a fibroid mass of enormous size, from a patient at University College Hospital, who has been the subject of this growth for upwards of ten years.

fibrous and smooth muscular tissue, like that of the uterus, extends—that is to say, the utero-rectal and utero-vesical folds of the broad ligament.* Muscular fibres lying under the peritoneum covering the uterus, broad ligaments, and ovaries, and serving certain important purposes in the process of ovulation (see p. 16), exist in the positions mentioned by this eminent pathologist as those in which fibroid tumours may originate. It is likely that the fibroid tumours of the ovaries—which are extremely rare—belong really to the category now under consideration, and that they originate in the muscular layer under the peritoneum in the neighbourhood of the ovary. Even in the ovaries themselves—if we adopt the views of some observers—are to be found muscular fibres, the presence of which would account for the initiation of fibroid tumours of the ovary. I believe it will serve a useful purpose if we denominate these tumours as *peri-uterine fibroid tumours*, in order to distinguish them from those actually and primarily connected with the uterus.

b. Interstitial or Parietal Fibroid Tumours.—These do not attain usually so large a size. The uterus always grows as a whole, enlarging often to a very great size. These tumours have usually a loose connection with the organ, being enclosed in a capsule, out of which they may be generally shelled on cutting through the uterine wall covering them (see fig. 101). They have vascular relations with the uterus at one or more points only. They are found in the wall of the body of the uterus; they distort and alter the shape of the cavity of the uterus; if the whole organ become very large, the uterus generally rises as a whole out of the pelvis. In some instances its shape prevents this escape from the cavity of the pelvis, and distressing results may then ensue.

Fig. 103.†



c. The Sub-mucous Fibroid Tumours resemble those last described, but they project more into the uterine cavity. Thus we may find the uterine cavity of great length, but having a crescentic outline owing to one of these tumours, which may be of great size, occupying one side of

* *Surgical Pathology*, p. 140, 1st ed.

† Fig. 103 represents the outline of a uterus affected with fibroid tumours, interstitial and sub-peritoneal, from a patient in University College Hospital.

the uterus. The opposite side is expanded and stretched over it.

All sorts of varieties in regard to position are observed. These sub-mucous tumours are generally encapsuled. After the lapse of some time many of them become fibrous polypi.

d. Fibrous Polypi of the Uterus.—These generally originate as sub-mucous fibroid tumours. They are attached to the inner surface of the uterus by a pedicle of very varying thickness. Sometimes the attachment is very wide, covering the whole fundus or the whole of one side. Their size varies from a pea to the size of a child's head, or even larger. When not larger than an egg, they usually escape from the uterus or partially so, and hang down into the vagina; but when larger than this, they may be retained wholly in the uterus for some years. Much depends on the size of the pedicle; when narrow, they may be pushed down into the os uteri early. They present a smooth exterior, and are usually quite hard and firm. They excite much irritation, bleeding, and frequent contractions of the uterus. (See fig. 106.)

We may now consider the nature, history, and progress of these fibroid growths of the uterus as a whole.

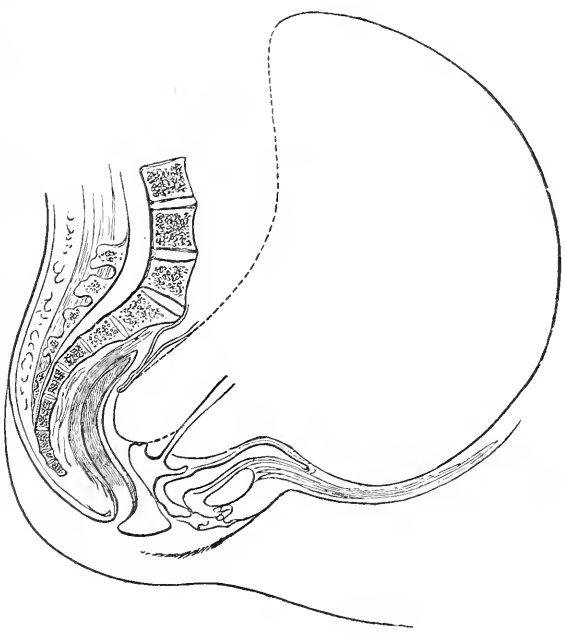
Their *growth* is always slow. Thus a tumour may be ten or twelve years attaining the size of a melon, and it would hardly attain such a size as this in less than three or four years. This will convey some idea as to the rate of progress.

As to their *structure*, it is pretty uniform. Vogel named them 'muscular' tumours. They contain many muscular fibres of the unstriped variety, precisely like those found in the substance of the uterine walls (see fig. 107). There are also many delicate filaments presenting an undulating or waved arrangement. These two elements constitute the bulk of the tumour, but there are to be seen also many fusiform nucleated cells with granules and molecular matter. They have on section a dense whitish structure, in which can be recognised the rounded nest-like portions of which they are made up. The appearance of the section much resembles that of the uterine wall. Harder or softer, now vascular, now paler; such are the variations observed.

They sometimes remain stationary as regards growth. More generally they tend outwards, growing towards the exterior or interior of the uterus, according to their primary position. Growing internally, they become *polypi*, and either remain suspended for a longer or shorter time by a pedicle from the interior

of the uterus, or become detached therefrom and expelled entirely. The question as to whether they are capable of *undergoing absorption* has been much debated. Dr. Playfair, who has written an interesting paper on the subject,* adduces cases to prove that this may occur. It is reasonable to suppose that this absorption is possible, and certain facts I have myself observed enable me to

Fig. 104.†



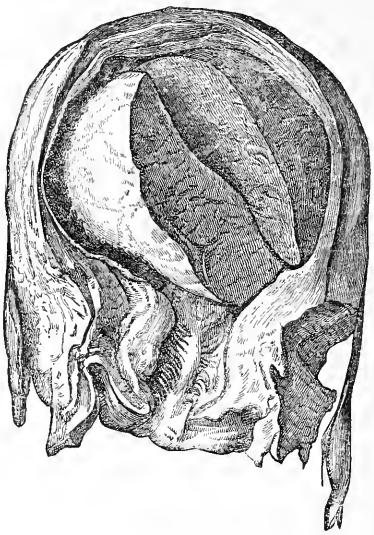
state that this does occasionally happen. They sometimes undergo a *cretaceous transformation*, becoming smaller in bulk at the same time. Another change occasionally observed is the *cystic transformation*. Thus a fibrous polypus may become changed, after remaining in utero some time, into a cyst-like body, each cyst containing fatty *débris*. Here the 'cysts' probably represent the centres of development of the original fibroid tumour. Of this I have related a case in the 'Transactions of the Pathological

* *Obst. Transact.*, vol. x. p. 102.

† Fig. 104 gives a lateral view of an enormous fibroid growth, from a patient lately in University College Hospital. The sound could be introduced within the uterine cavity as far as the point to which the lines in the drawing extend.

Society.'* The so-called 'fatty polypi' of the uterus are instances of the same kind. The cystic transformation does not

Fig. 105.†



appear to affect parietal fibroid tumours, but we have some very important instances of it in that tumour which is now and then found external to the uterus—the fibro-cystic tumour of the uterus. A careful examination of the facts recorded leads to the conclusion that these fibro-cystic tumours, which in many particulars so much resemble ovarian cystic tumours, are primarily fibroid tumours, either sub-peritoneal uterine fibroids, or sub-peritoneal peri-uterine fibroids (see *ante*, p. 499). The importance of these rare tumours is great, inasmuch as they have been mistaken for ovarian tumours. Hence the interest of this cystic transformation. Paget‡ remarks on this subject, that the formation of cysts in fibrous tumours is not rare, especially if they be more than usually loose-textured; that the cyst-formation may be due to a local softening and liquefaction of part of the tumour, with effusion of fluid in the affected part, or to an accumulation of fluid in the interspaces of the intersecting bands; and he accounts

* Vol. xi. p. 173.

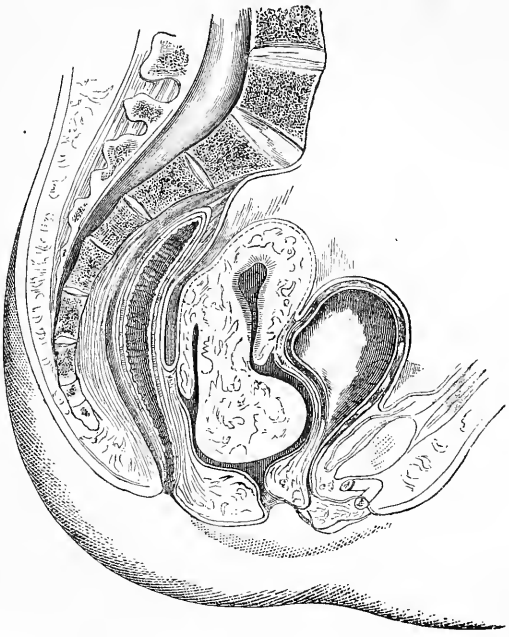
† Fig. 105, from a preparation in University College Museum. A sub-mucous fibroid tumour, polypoidal in character.

‡ *Surgical Pathology*, vol. ii. p. 137, 1st ed.

thus for the formation of the roughly-bounded cavities which may be found in uterine tumours.

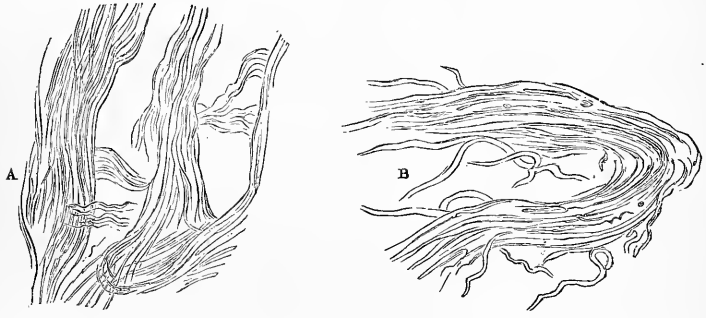
The following case of fibro-cystic tumour of the uterus is

Fig. 106.*



related by Mr. Spencer Wells.† The patient was single, æt. 53;

Fig. 107.‡



* Fig. 106 represents a fibrous polypus projecting from the uterus into the vagina: operated on in University College Hospital.

† *On Diseases of the Ovaries*, vol. i. p. 354.

‡ Fig. 107 represents th microscopical structure of an ordinary fibrous polypus: A the harder central, and B the softer external layers.

there was an irregular, obscurely-fluctuating tumour in the abdomen, menstruation latterly scanty, abdomen increased in size from 1853 to 1863, when an operation was undertaken. The tumour was closely adherent to the right iliac fossa, connected with the uterus by a thick band; it was a fibro-cystic growth from the right side of the fundus; its solid portion weighed 16 lbs., and from a large cyst within it 26 pints of fluid and 4 lbs. of lumpy masses of decomposed fibrin were removed. The uterus was twice its natural size, the os was situated high up, and behind the tumour.

A second very interesting case is also recorded by Mr. Spencer Wells.* The lady, æt. 45, was operated on as for ovariotomy. Ten years before, two tumours the size of a goose egg had been detected by Dr. Stokes, one central, a little above the umbilicus, the other under the anterior superior spinous process of the ilium. At the time of the operation, there was above much ascitic fluid, below what appeared to be a multilocular cyst. The tumour was found to consist of two parts: the left, which was removed, was attached to the uterus, and to the other part, which was not removed. The removed portion measured 18 inches by 12, and was 7 inches thick, weighed 20 lbs., in addition to 12 pints of bloody serum removed during operation. It was composed of fibrous tissue split up by little cavities containing serum. In some parts were little masses like fibroid tumours—these in process of fatty and calcareous transformation. In others cysts with blood contents, one of which was the size of an adult head, divided into several compartments. The second tumour, removed after death, measured 18 inches by 16, and 7 inches thick, attached by a pedicle $3\frac{1}{2}$ inches long and 2 broad, which pedicle was itself hollowed into cysts. In it was one large cyst 12 inches in diameter. The uterus was a narrow tube 7 inches long.

In a case operated on by Mr. Baker Brown in 1862, the age of the patient was 36. Enlargement of the abdomen for six years. The tumour could not be removed. The specimen, removed after death, was exhibited at the Pathological Society, and reported on by Mr. Holmes and Mr. Nunn.† The fundus of the uterus was directly continuous with the substance of the tumour, the solid part of the tumour separated into two parts near the uterus by interposition of large cysts. The mass of the tumour was situated in

* *Op. cit.* p. 356. † *Trans. of Path. Soc.* vol. xiv. p. 199.

the sub-peritoneal tissue, and adhered above to the omentum, in the tissue of which some fibrous nodules were to be seen. . . . 'The 'great tumour was made up of a mass of nodules or rounded 'tumours of a fibrous appearance and consistence, separated from 'each other by large cysts, in many of which a purulent fluid was 'still contained. The tissue of the tumours resembled under the 'microscope the ordinary fibroid tumour of the uterus, but many 'of them contained cysts of various sizes, and in almost all some 'very small spaces, which seemed the commencement of such 'cysts, could be seen.' The reporters considered it to be a specimen of fibro-cystic tumour attached to and incorporated with the fundus uteri, but probably originating in the sub-peritoneal tissue in its neighbourhood.

A review of the facts relating to these fibro-cystic tumours renders it probable that the cavities in them are hardly cystic in the true sense of the word at all. They appear to be often formed by the breaking up or softening of parts of the tumour, by hæmorrhage within it, by formation of puriform material, and other changes of a destructive character. Further, these tumours appear always to have a very chronic course, a fact which should be of great service in their diagnosis from ovarian tumours.

Recurrent Fibroid Tumour.—This designation is applied to a very rare affection. It is a growth proceeding from the inner wall of the uterus, and projecting downwards through the os in the manner of ordinary fibrous polypus, but differing from ordinary polypus in that a new tumour is liable to grow soon after the old one is removed. Thus a case is related by Dr. West,* who terms it 'recurrent fibroid tumour,' in which a polypus the size of a pigeon's egg was found protruding from the os uteri. Portions of it were torn away by repeated operations, nine of which were performed in the course of a year and a half, but the growth always recurred, and, after having been six years under observation, the patient died. Her age was 22 when first seen; after death a large tumour was found in the abdomen, like that in the uterus, and continuous through the uterine wall with it. Similar tumours were found in the lungs, in the pericardium, and in the body of the sixth cervical vertebra. The tumours were all alike, composed of oat-shaped cells, mingled with others of a flattened

* *Diseases of Women*, 2nd ed. p. 333. For a particular account of the post-mortem appearances in this case, drawn up by Mr. Callender, see *Trans. of the Path. Soc.*, vol. ix. p. 327.

fibroid form. The tumours were lobulated, divided by septa; they were soft and elastic. The tumour within the uterus grew from a broad base.

In another very interesting case, related by Mr. Hutchinson,* there was a recurrent fibroid tumour of the uterus, assuming a polypoid shape, in a woman æt. 39, the history of which extended over a period of three years, at the end of which time the case ended fatally. The growth was polypoid in shape, soft, and lacerable, and attempts to remove it entirely failed from this circumstance. It was three times partially removed, growing again after each operation. The growth was attached by a broad base to the whole of the fundus and posterior uterine wall. It was soft, lobulated, of a grey-white colour, and readily tore up into fibrils, all of which had a parallel arrangement. Nuclei and numerous small cells were seen. The tumour, very distinct from ordinary fibrous tumours of the uterus, presented no resemblance to epithelial or scirrhous cancer. There were no secondary deposits in this case.

The tumours in both these cases appear to have been identical with those found in other parts and known as recurring fibrous tumours. In both instances there were severe floodings, offensive discharges, and other symptoms present in bad cases of polypus uteri.

It is evident, from what has been stated, that the uterus is liable to become the seat of a growth which is unlike cancer in everything but its malignity. The cases are, so far as we know at present, very rare; but it is possible that, now attention has been directed to the possibility of their occurrence, they may be oftener detected.

The *symptoms* produced by the presence of fibroid growths of the uterus vary excessively. Hæmorrhage is frequent when fibrous polypus is present, less so in the parietal form, least so in the sub-peritoneal tumour. Watery discharges, sanious, or even offensive discharges attend polypi, but not other cases, as a rule. Pain is usually observed in all varieties of cases, but very large tumours may give comparatively little uneasiness. Menstruation is generally disturbed. In some cases very severe dysmenorrhœa results. The mechanical results are difficulties in micturition, in defæcation, prolapsus of the uterus, pressure on the veins in the pelvis, and consequent œdema, pressure on the nerves, giving rise

* *Trans. of the Path. Soc.* vol. viii. p. 287.

to pain or numbness extending usually down one of the thighs, &c. These mechanical disturbances vary in kind and degree as the tumour is large or small, and according to its shape and position. It may be so placed and so large as to actually block up the pelvis, the functions of the rectum and bladder being then very seriously interfered with.

CERTAIN OTHER VARIETIES OF UTERINE POLYPUS.

Certain growths from the interior of the uterus which now and then assume the characters of polypi, must here be mentioned. One of these is the *glandular polypus*. It is an hypertrophy of the mucous lining of the uterus, containing canals or channels, which appear to be the uterine glands enlarged. Dr. Oldham's 'channel polypi' seem to belong to this category. Mr. Wood* exhibited a specimen at the Pathological Society having the size of a small walnut, a broad base growing from the fundus. It was soft, very vascular, and there were seen numerous tubes or canals travelling through the substance and connected by strong processes of fibrous tissue. This specimen will serve as a type of the class. They are not common.

Next we have *mucous polypi*, as they have been termed, consisting of enlarged mucous follicles from the cervical cavity of the uterus, attached generally by a long pedicle, and hanging down in the vaginal canal. Their size varies from a barleycorn to that of a walnut.

These smaller polypi may occasion hæmorrhages and other inconveniences apparently disproportionate to their size.

A hard, firm, resisting, well-defined tumour, involving the uterus, reaching as far as, or beyond the umbilicus, which has been growing for three or more years, will, if uniform and symmetrical in shape, probably prove to be a fibrous polypus of the uterus, but if there be a want of symmetry about the tumour we have probably to do with a fibrous growth which is not within the uterine cavity. More generally we are able to recognise this latter fact at once, judging by the unevenness of the surface of the tumour felt through the abdominal parietes, while in other cases it is still more evident from the circumstance that the fingers recognise the presence of rounded, knob-like masses, which are fibrous tumours growing from the exterior of the

* *Trans. Path. Soc.* vol. x. p. 206.

uterus. Sometimes these growths are pedunculated, and then they are movable to an extent varying with the length of the pedicle.

DIAGNOSIS.

The diagnosis of the existence of the various forms of fibroid growths of the uterus is only to be satisfactorily made by investigating the condition of the uterus physically. The digital examination of the uterus from the vagina is of great service in this respect. The examination of the abdomen is not less so when the tumour is of large size. In the chapter on Examination of Tumours felt through the Vaginal Walls, the differential diagnosis has been pretty fully considered. The finger, aided by the sound, in this way enables us to estimate very accurately the general relations of fibroid tumours when not of great size. The existence of polypi is ascertained in the same way, it being now and then necessary also to dilate the os uteri, to gain access to these polypoidal growths.

The examination of the abdomen by the touch is always required to determine the relations of the larger varieties, and the conjoint examination by one finger in the vagina and the other hand laid on the abdomen is frequently a great aid to the diagnosis.

It will thus be seen that when the case before us dates back for any considerable time, the diagnosis, up to a certain point, is comparatively easy; the firmness and density of the tumour being peculiar and characteristic. The slow growth of the tumour, and its firmness and solidity, separate it from the ordinary forms of ovarian tumour, but there are some forms of ovarian tumour with which it may more readily be confounded. In cancerous enlargement of the uterus the progress is less chronic than in fibrous tumour; moreover, cancer is often present in other organs also. There are other considerations which are equally significant in the diagnosis of fibrous growths. When the fibrous growths are external to the cavity of the uterus, the symptoms are often very slight, and the general health of the patient may be unaffected, unless the shape or position of the tumour be such as to mechanically interfere with the evacuation of the bladder or of the rectum. In the early stage of the growth of such tumours there may be, however, mechanical derangements, these being entirely absent at a later period when the tumour has risen out of the pelvis into the abdomen. If, on the other hand, the uterus be enlarged

together with the tumour, as it necessarily is when the tumour is enclosed within it, the symptoms are almost always more severe and such as to attract attention at an early period. Profuse menstruation, hæmorrhages, serous discharges, more or less constant pains, and discomfort of various kinds, which by their association and long continuance not rarely reduce the patient to a very low debilitated state, are present under such circumstances; and a slow-growing, hard, symmetrical tumour, felt above the pubes in a patient with symptoms such as those described, generally proves to be a large polypus of the uterus. The only condition capable of closely simulating this condition is internal cancer of the uterus—a very rare disease, and one which might be expected to have a less chronic course than fibrous polypus. The state of the lower segment of the uterus affords valuable diagnostic information in cases of hard uterine enlargement. When a polypus is present, the examination of the os, and through this opening of the interior of the uterus by means of the uterine sound, generally gives conclusive information on this point. Slight consideration will be sufficient to show that between fibrous tumours situate in the wall of the uterus, but partly projecting into the cavity, and fibrous polypi, the diagnostic signs would not be very decided. The symptoms presented by the patient give, however, some material assistance. Thus, as observed by Scanzoni, in the case of fibrous tumours growing near the cavity, but interstitial in character, the pains experienced by the patient are generally more severe than when there is a polypus present, while, at the same time, the amount of hæmorrhagic loss is generally much less considerable in the former than in the latter case.

That solid tumours of the ovaries may, under certain circumstances, present physical signs very closely resembling those present in the case of fibrous tumours of the uterus, has been just observed. The greatest amount of difficulty is in deciding between a tolerably large fibrous tumour pedunculated, and to a certain extent movable independently of the uterus, and some solid tumours of the ovary, both being chronic in their course, while the physical inconveniences produced may be identical in the two cases. I recollect seeing an enormous fibroid tumour which had been removed from the abdomen by Mr. Spencer Wells, and to the touch exactly resembled a semi-fluctuating ovarian tumour.* I have myself removed a very large fibroid tumour, the history

* Described in *Obst. Trans.* vol. xi. p. 73.

connected with which suggested the idea of an ovarian tumour previous to the operation. The diagnosis of ovarian tumours, of which the contents are chiefly fluid, from fibrous tumours of the uterus, is more easy, the presence of fluctuation and other characters giving important diagnostic criteria. (See Ovarian Tumours.)

The following is a tabular statement of cases of fibroid tumour and polypus observed by me at University College Hospital in a period of a little over four years. It will serve to exhibit the more essential particulars connected with the clinical history of these diseases. Of the total number of 96 it will be found that 72 were instances of fibroid tumour and 14 of polypus. Of the women who were married, 78 in number, 30 were sterile. It will be observed that in as many as 8 the disease was observed before the age of 26.

Fibroid Tumours and Fibrous Polypi.

(*University College Hospital*, 1866–9.)

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
17	A. H.	S.	0	Fibroid tumour in front and to right of uterus.
20	J. G.	M.	1	Fibroid tumour left side of uterus.
20	E. G.	S.		Small mucous polypus of os uteri.
22	E. D.	M.	0	Tumour behind uterus size of egg.
22	B.	M.	1	Fibroid tumour in anterior wall (? anteversion).
23	C.	M.	0	2 miscarriages. Fibroid tumour.
24	A. C.	S.		Fibroid tumour, size egg, in left side of uterus. Dysmenorrhœa.
25	L. D.	M.	2	Fibroid tumour, size pigeon's egg, to front and right of uterus.
26	L. D.	M.	0	Fibroid tumour, size small orange, in anterior wall of uterus.
26	M. M.	M.	0	Married 5 years. Large fibroid tumour on left anterior side of uterus. (Injection with acetic acid.)
27	E. A.	S.		Fibroid tumour, size small fœtal head, right side of abdomen.
27	A. T.	S.		Large fibroid tumour. (Incision of cervix.)
27	M. A. G.	M.	1	Fibroid tumour at back of uterus.
27	E. S.	M.	0	Fibroid tumour, size of orange, in anterior wall of uterus.
28	E. L.	M.	4	Fibroid tumour behind uterus, size Maltese orange. Last child three years ago.
30	M. A. H.	M.	1	Child 5 years old. Fibroid tumour on right side of uterus.
30	S. H.	M.	1	Fibroid tumour on posterior aspect of uterus.
30	E. P.	M.	0	Married 11 years. Fibroid tumour of uterus, size of fist.
30	J. O.	M.	7	Fibroid tumour to left of uterus, size of small egg. Uterus or bladder prolapsed.
30	E. D.	M.	0	Married 4 years. Fibroid tumour in front of cervix, size, filbert.

FIBROID TUMOURS AND FIBROUS POLYPI—*Continued.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
30	A. F.	M.	1	Child 10 years old. Fibroid tumour in anterior right wall of uterus. Cavity of uterus $\frac{3}{4}$ inch too long.
30	D. W.	S.		Fibroid tumour, size orange, to right of uterus.
31	E. N.	M.	1	Child 2 years old. Large hard tumour 6 inches in diameter, on right side of abdomen, apparently uterine. Sound goes in behind it.
31	M. A. S.	M.	0	Very hard tumour behind uterus, size of fist, continuous with uterus. Tumour also above pubes half way to umbilicus.
31	M. B.	S.		Uterus enlarged, anteriorly and to right. Ambiguous swelling also behind it.
32	J. W.	M.	1	Child 15 years old. Two rounded fibroid tumours, one in front and one to left of uterus, connected together. Uterus pressed downwards and retroflexed.
32	S. R.	M.	0	Married 9 years. Small fibroid tumour to right of uterus.
32	C.	M.	0	Married 4 years. Large fibroid tumour, size fœtal head, in front of uterus. Sound enters 3 inches.
33	E. W.	M.	5	Last child 6 years old. Fibroid tumour, anterior wall.
33	S. K.	M.	2	Last child 9 years old. Fibroid tumour to right side of uterus.
33	A. H.	M.	0	Married 9 years. Tumour, size pigeon's egg, in right latero anterior wall. Treated by incision of cervix internally, and use of stem pessary. Pregnancy followed end of 1869.
34	E. M.	M.	7	Last child $1\frac{1}{2}$ year. Has passed an egg-shaped hard substance, probably fibroid polypus.
34	C. T.	S.		Enormous fibroid tumour.
35	M. A. T.			Fibroid tumour.
35	A. B.	M.	0	Fibroid tumour right side of uterus.
35	E. R.	M.	7	Retroflexion of uterus, and a soft flattish tumour behind it.
35	L. N.	M.	6	Polypus attached to cervix. Operation.
35	S. B.	M.	8	(?) Fibroid tumour in anterior wall.
35	E. B.	S.		Polypus. Operation by scissors.
35	E. C.	M.	1	Child aged 16. Fibroid tumour growing from back of uterus at junction of cervix and body, size pigeon's egg, flattened.
35	E. M.	M.	0	Fibroid tumours, anterior and posterior to uterus.
36	J. W.	M.	0	Fibroid tumour right side of uterus.
36	M. A. E.	M.	0	Fibroid tumour externally. Signs of disintegration of uterine polypus.
36	E. L.	M.	4	Fibroid tumour growing from back of uterus low down. Last child $2\frac{1}{2}$ years old.
36	E. M.	M.	3	Last child 10 years old. Fibroid tumour to right of uterus (?).
36	A. G.	M.	0	Married 20 years. General enlargement of uterus, but especially on right side. Cervix also large. Vaginal hyperæsthesia.
36	E. L.	M.	4	Also 5 miscarriages, last 9 years ago. Fibroid tumour right side, size egg. Membranous menstruation and dysmenorrhœa.
36	A.	M.	3	Fibroid tumour on right side and front of uterus.
36	J. B.	M.	3	Also 5 miscarriages. Says has had fibroid tumour removed. Uterus still large.

FIBROID TUMOURS AND FIBROUS POLYPI—*Continued.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
37	A. W.	M.	0	Large fibroid tumour 8 inches oblique vertical diameter. Lies most to right side. Os uteri drawn up.
37	S. C.	M.	0	1 miscarriage 18 years ago. Fibroid tumour size orange, right side of uterus.
37	W.	M.	3	Last child 3½ years old. Fibroid tumour to right of uterus, pendulous.
37	C.	M.	2	Last child 20 years old. Fibroid tumour to left of uterus.
37	M.	M.	0	Polypoid fibroid tumour, size of fist. Patient died of pyæmia following dilatation of cervix uteri.
38	S. S.	M.	0	Married 16 years. Fibroid tumour size of gravid uterus at 6 months. Sound passes a little to left, and in front of it.
39	C. P.	M.	7	Nodular enlargement to right front of uterus.
39	E. A.	M.	3	Last child 10 years old. Fibroid tumour back of uterus, size of an egg.
40	A. C.	M.	0	Married 4 years. Fibroid tumour behind uterus, size hen's egg.
40	M. W.	M.	0	Large fibroid tumour posterior to uterus. Incised freely.
40	M. D.	M.	0	Very large fibroid tumour of uterus. (See Fig. 102.)
40	M. W.	M.	0	Married 18 years. Fibroid tumour, size orange, behind uterus. Retroversion of uterus also.
40	E. F.	M.	0	Married 18 years. Fibroid tumour, size fœtal head, round, moveable, small pedicle.
40	E. D.	S.		Two large fibroid tumours, anterior part of uterus.
40	C. L.	M.	1	Child 15 years old. Fibroid tumour, size 1½ inch in diameter behind uterus. Sound passes to left.
40	E. C.	S.	0	Large fibroid tumour.
41	D.	M.		Soft polypus, breaking down (?), clots, &c.
42	E. W.	S.		Large fibroid tumour. (In-Patient.)
42	C. B.	M.	1	Fibroid tumour behind uterus, size of fist. Retroflexion also. Child many years ago.
42	C. S.	M.	2	Last child 16 years. Fibroid tumour back of uterus.
42	E. M.	M.	2	Last child 15 years. Polypus. Operation.
42	C. T.	M.	0	Considerable fibroid tumour to right of uterus.
43	F. Y.	M.	1	Last child 22 years old. 1 miscarriage 5 years after. Fibroid polypus or fibroid tumour. Sound, 4 inches.
43	M. A. F.	M.	3	Last child 20 years old. Fibroid tumour, size fœtal head. Uterus also enlarged to left side low down.
44	S. C.	S.		Enormous fibroid tumour, size adult's head, in 3 portions.
44	E. E.	S.		Aggregation of 3 or more large fibroid tumours, altogether exceeding size of fœtal head.
44	C. L.	M.	2	Last child 10 months old. Small fibroid tumour in anterior wall of cervix.
45	C. M.			Polypus, size of filbert.
45	S. D.	M.	1	Also 5 miscarriages. Polypus. Removed by Écraseur.
46	E. F.	M.	1	Enormous fibroid tumour extending to 3 inches above umbilicus. 8 inches in transverse diameter. Appears to originate in posterior wall of uterus. Sound passes 4½ inches in front of tumour.
46	S. R.	S.		Fibroid tumour size of adult head.
46	B.	M.	0	Married 17 years. Fibroid tumour to left of uterus.

FIBROID TUMOURS AND FIBROUS POLYPI—*Continued.*

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
47	E. D.	M.	0	Pelvis filled posteriorly with fibroid enlargement of uterus, growing also upwards to a little above umbilicus.
48	E. M.	M.	7	Last child 6 years. Mucous polypus. Operation.
48	C. J.	S.		Small polypus.
48	S.	M.	0	Fibroid enlargement of anterior part of cervix.
48	E. M.	S.		Large fibroid tumour, size of head. (At one time thought to be ovarian.)
49	R. G.	M.	2	Last child 10 years. Large fibroid tumour, size head. Partly in pelvis.
49	M. A. M.	M.	9	Polypus. Operation.
49	M. B.	M.	9	Fibroid tumour, size nut, in front of cervix.
49	J. R.	M.	4	Fibroid tumour, size orange, back of uterus.
50	J. D.	M.	0	Fibroid tumour, size orange, at back of uterus. Prolapsus of the uterus and tumour externally. Uterine canal almost closed.
50	A. S.	M.		Large fibroid tumour as high as umbilicus.
50	E. S.	M.	0	Large fibroid tumour filling pelvis.
50	M. C.	M.	9	Polypus. Removed by scissors.
50	C.	M.	6	Polypus, size pigeon's egg. Operation.
50	F. D.	M.	12	Polypus, size of apple. Operation.
58	M. S.	M.	5	
64	J. N.	M.	7	Fibroid tumour behind uterus.

TREATMENT.

Respecting the origin of fibroid growths of the uterus we know but little. I do not share a belief entertained by some that the formation of these growths is in any way connected with certain pernicious habits. We know of no means whereby the formation of these growths can be actually prevented. A particular portion of the uterine substance seems to become unaccountably affected with a morbid tendency to grow and to become hypertrophied. This particular portion—owing to some, perhaps accidental, circumstance—remains forthwith subject only in a certain degree to the laws which guide the growth, the increase or diminution in size, of the other portions of uterine tissue.

The danger to life consequent on the presence of fibroid growths in or about the uterus varies very much in different cases, and is connected almost entirely with the severity and intensity of the secondary symptoms. The most considerable source of danger lies in the oft-repeated hæmorrhages, the chronic menorrhagia, leucorrhœa, &c., present in bad cases, and in the exhausting effects of these on the constitution of the patient. In themselves these tumours are almost innocuous, but they may, when large, mechanically interfere with important functions of the body, and

in that way bring about a fatal result. In one case where the tumour was of considerable size the irritation of its presence occasioned enormous accumulations of ascitic fluid in the abdomen, which by its pressure threatened life. Hence the indications for treatment vary in different cases.

The removal of the tumour should be effected whenever the circumstances are such as to render the removal safe for the patient. Very frequently the tumour can only be extirpated at great risk, and in other cases the connections of the growth with the uterus are such, that nothing less than the removal of the entire uterus will accomplish its complete eradication.

The most simple case is that in which there is a fibrous polypus pendulous in the vagina or projecting at the vulva, attached by a pedicle to the interior of the uterus. The only proper treatment in cases of this kind is removal of the polypus. A whipcord ligature was formerly employed for the purpose of cutting through the pedicle of the polypus, the loop being passed round the pedicle and tightened by means of the well-known apparatus of Dr. Gooch. The pressure of the ligature caused the separation of the tumour in a few days, or longer when the pedicle was of considerable thickness. This method of procedure is now almost fallen into disuse. The knife, the scissors, or the écraseur armed with the chain, the wire rope, or a strong wire, are now most largely employed. It has been found that when the knife or scissors are used the hæmorrhage is either very trifling or very easily controllable; and by the use of the écraseur the liability to hæmorrhage is reduced almost to *nil*. The old plan is vastly inferior to the knife, scissors, or écraseur; for, unless the pedicle be very small, the whipcord ligature does not cut it through in less than two or three days, during which time the patient is subjected to the great inconvenience of having a semi-putrid mass lying in the vagina, and to the great danger of putrid absorption and consequent pyæmia. It is undoubtedly a matter of great importance to complete the removal of the polypus at once in all cases where it is found feasible.

In the choice of the particular instrument we must be guided by the circumstances of the case. In the case of a polypus with a pedicle the size of the shaft of a feather, it is quite immaterial whether we use the curved scissors, the polyptome (a long hook, the concave side of which has a cutting edge), or the écraseur armed with chain, or wire, or wire rope. Each operator will choose the instrument with the manipulation of which he is best

acquainted. There is necessarily more danger of injuring the vagina when the scissors or the knife are used, but even this depends rather on the operator than the instrument. When the pedicle is larger than that above stated, the écraseur armed with chain, or wire rope, is the best instrument, inasmuch as thus the operation is more easily effected, and there is less liability to bleeding. This latter method of cutting across the pedicle is applicable also in cases where the scissors or knife could not possibly be used owing to the position of the pedicle. The chain écraseur is applied with difficulty when the pedicle is thick, and here the wire, or wire rope (as used in Dr. Braxton Hicks's instrument), is most valuable. The size of the rope must be increased in proportion to the thickness of the pedicle. A modification of Gooch's apparatus, made extremely strong, and capable of being used with any size of the wire, or wire rope, is made by Messrs. Weiss, and has proved very useful in cases of polypus with a very thick pedicle. Dr. Braxton Hicks's instrument has been found effective in many such cases. Meyer's instrument (see fig. 68) is the latest, and a very good one. I have employed the écraseur with chain, and also with strands of wire, and the scissors, for the removal of fibrous polypi. If the pedicle is small, the scissors answer every purpose, but if it is thick the écraseur is to be preferred. In the case of a large polypus projecting through the os uteri into the vagina, we may, it must be recollected, have to deal with a partially inverted uterus as well as the polypus. The following case illustrates this point: A tumour was exhibited by Dr. J. Ogle at the Pathological Society, sent to him by Dr. Slater of Halifax, Nova Scotia. Dr. Slater had removed it by means of the écraseur, and the patient is said to have made a very good recovery. The tumour was referred to Dr. Ogle, Dr. Marion Sims, and myself for a report, the substance of which was as follows:* 'The tumour has the shape of a melon; 'it is $4\frac{1}{2}$ inches in diameter, $2\frac{1}{2}$ in thickness. On one aspect is a 'surface 1 inch long, ovoid in shape, slightly depressed, and per- 'fectly smooth. This surface was evidently a part of the peritoneal 'surface of the uterus. The tumour consists of a polypus growing 'centrally from the interior of the uterus. In separating the 'tumour, the écraseur had cut away the portion of the uterus with 'which the polypus was connected, which portion formed, in fact, 'this pedicle of the tumour.' This case is a very unusual one, and indicates the propriety of measuring the cavity of the uterus before

* *Trans. of Path. Soc.* vol. xvi. p. 211.

cutting through what may appear to be the pedicle. A somewhat similar case is depicted in fig. 59.

The manipulations necessary to remove a polypus of the more ordinary form require a word or two. I have found the best method is to pass a piece of stout whipcord round the pedicle, to slightly tighten this, and then to drag upon it. This brings the neck of the polypus lower down and better within reach, supposing the scissors or any other cutting instrument to be used. A strong vulsellum forceps answers the same purpose, but not quite so efficiently.

In rare instances uterine fibrous polypi attain an enormous size before they are expelled from the uterine cavity into the vagina, and in such cases the mere size of the tumour creates a difficulty in reaching the neck of the polypus. Under these circumstances it has been found necessary to remove the tumour piecemeal; to cut away or remove as much of the tumour as can be reached at one operation, and to wait until the remainder is expelled lower down before again operating. When the mass is very large, it may be necessary to dilate the vagina by means of a caoutchouc bag filled with water or sponge in order to reach the tumour more readily.

When the polypus has been removed, the patient should be kept quiet for a few days, and in most cases it is advisable to give an opiate after the operation. Should hæmorrhage occur after the operation, it will be easily controllable by carefully plugging the vagina.

The next cases we have to consider are those in which the fibrous growth is attached to the interior of the uterus by a pedicle, the growth itself, however, remaining still within the uterus. The os uteri may be found small or tolerably widely open. To Sir J. Y. Simpson is due the merit not only of first pointing out how the diagnosis is to be made where the os is found closed, viz. by artificial dilatation of the os uteri, but also of first practising the operation of removal of polypi from the interior of the uterus under these circumstances.* The thickness of the pedicle of the polypus may vary; the size of the growth itself also may vary; but as a rule we do not find that very large polypi attached by a narrow pedicle remain long within the uterine cavity; the more usual circumstance being that the os gradually expands and allows the tumour to fall wholly or in part beyond the os uteri. Where the pedicle is narrow, the operation for the removal of such polypi

* Original edition of *Obst. Works*, vol. i. p. 128.

is not difficult, but it is more difficult than when the polypus is lying in the vagina. The removal of a polypus from within the uterus is quite feasible, and it is, in most cases, a proper operation. We may judge roughly of the thickness of the pedicle by endeavouring to twist the growth on its axis. Torsion has been employed in a very few of these cases, but the pedicle is rarely so small as to allow of its being attempted successfully. Knives of various forms have been contrived to cut across the pedicle; such is the polyptome of Professor Simpson—a hook with a knife in the concavity—or the polyptrite of Dr. Aveling (fig. 108), which is a modification of Simpson's. The instrument is introduced through the os, the pedicle embraced, and thus cut through. Curved scissors may be also employed, but the manipulations necessary are not very easy to perform if the os be narrow or unyielding. The wire or the wire rope is best adapted for cutting across the pedicle, the only difficulty being the placing of the rope on the neck of the tumour. In order to enable us to perform the necessary manipulations, the os frequently requires to be artificially dilated. Dr. Lombe Atthill † describes and figures a very nicely conceived method of dilating the cervix in such cases—viz. by the conjoined use of a bundle of tangle tents, by means of which the cervix can be rapidly dilated and the necessary operative procedures within the cavity of the organ facilitated.

Fig. 108.*

Another class of cases are those in which there is a fibrous growth developed in the substance of the cervix uteri, or one lip of the os uteri. These cases are not very common, but the tumour here situate may attain a great size. The treatment of such cases is identical with that applicable in cases of hypertrophy of the cervix uteri (see p. 281).

We next come to the series of cases, respecting the proper treatment of which there is some difference of opinion—viz., those fibrous tumours attached to the uterus by a very broad base, there being a complete absence of anything that can be termed a pedicle. The most manageable of such cases are those in which, although the basis of attachment is broad, yet the tumour itself is of a polypoidal shape. Such a tumour may project partially through

* Fig. 108 represents Dr. Aveling's polyptrite.

† *Lectures on Diseases of Women*, Dublin, 1871.

the os uteri. The wire-rope écraseur, or the wire ligature, may be used to cut across such a tumour, even when tolerably high up. Various methods of treatment have been practised in cases where there has been no such polypoidal character of the tumour. Amussat incised the os and cervix, and then separated the tumour from the inside of the uterus by a kind of enucleation, or shelling out. This operation, variously modified, has been carried out more recently by others also. Thus Mr. Baker Brown adopted in several cases a procedure * for the removal of such tumours based on the supposition that, when these tumours are partially broken up or disintegrated, as by cutting a piece out of the centre, they have a tendency to perish and separate spontaneously. The principle of removing one portion of a tumour in order to destroy the remainder, is undoubtedly a sound one. Dr. Gooch was the first to allude to this, for he held that when a ligature was applied round the neck of a polypus, the part above as well as the part below the ligature perished. In some cases, however, the attachment and connection of the tumour with the uterus being considerable, little or no effect would be produced on the remainder by the removal of a part of the tumour.

Many of these intra-uterine operations have been done more or less successfully. Dr. Hall Davis operated, in one case where the attachment was very considerable, by a combined process of tearing, the use of the ligature, and cutting.† My friend Dr. Sarell, of Constantinople, also overcame successfully the difficulties encountered in removing, by successive operations, a large fibrous growth coming under the foregoing category.‡ Dr. Tanner has contributed a valuable paper on the treatment of intra-uterine polypi, and has related cases in which operations were performed.§ The tumours were more or less polypoidal in character.

All operations on fibrous tumours of the non-polypoidal form and shape are somewhat hazardous; pyæmia, inflammation of the uterus, &c., being always liable to occur. On this question it is impossible to lay down a law; it cannot be said that it is impossible a case could arise in which the dangers of the operation would not be counterbalanced by the advantages derivable from its performance. These dangers are often very considerable: the risk of perforating the uterus, the inflammation of the uterus which may be set up, the pyæmic condition liable to arise from the cutting,

* *Obst. Trans.* vols. i. and iii.
† *Obst. Trans.* vol. ii.
‡ *Gaz. Méd. d'Orient*, 1860, vol. iv. p. 2.
§ *Lond. Med. Rev.* July 1861.

the tearing, and prolonged manipulations which may be required to carry the operation to a termination—all these are evils not to be lightly encountered; but still cases may arise in which these dangers may appear to be lessened by the peculiar circumstances of the case, and in which, consequently, surgical interference with intra-uterine fibroid tumours, non-pedunculate and of considerable size, may be not improperly decided on.

My own opinion is, that if manipulations are to be performed within the uterus, any extensive cutting of the os or cervix uteri should be avoided. Dilatation is far preferable, the risk of cutting quite through into the peritoneal cavity being avoided. Dilatation *after* a cutting operation is always dangerous. In dealing with the tumour after such dilatation, the use of sharply cutting instruments should, I think, be avoided; the scissors appears the best instrument to cut into the tumour, after which gentle tearing will succeed in many cases in removing great part of the tumour.

The deep incision of the os and cervix alone, is occasionally practised with the view of lessening or arresting the severe and exhausting hæmorrhages sometimes present. The procedure appears to have been first employed simultaneously by M. Nélaton, Mr. Brown, and Dr. M'Clintock. The *rationale* of the efficacy of the operation, which really does appear to be of service in some cases, has been variously given. My explanation is, that the hæmorrhage is arrested because no further accumulation of blood in the uterus occurs. When the os is very small, blood may collect, form a clot which distends the uterus, and by-and-by induces contraction, and then expulsion. Just as is the case in abortion in the early months, the uterus is thus alternately full of blood and empty. The dilatation of the uterus becoming greater, the blood or clot is got rid of, but again accumulates. When the os is incised, the blood oozes away readily, there is no accumulation, no stretching of the uterine wall, and hæmorrhage is lessened. The operation does not succeed in arresting the bleeding in all cases; this is not to be expected. An aperture sufficient to admit the forefinger will be found, in my judgment, adequate; but the incision or dilatation must affect the whole of the cervical canal, including the internal os uteri. The canal so enlarged must be well plugged by lint steeped in glycerine and perchloride of iron. This plug will come away in three or four days, and the finger must be occasionally used afterwards to prevent reclosure.

The enucleation of interstitial or parietal fibroid tumours is not generally practicable from the internal passages, unless the tumour be situated very low down, or in the substance of the cervix. Still less is their enucleation practicable from the abdominal surface. These interstitial tumours occasion less serious disturbance than polypi or sub-mucous fibroids, but they may be so situated as to occasion grave inconveniences (see 'Dysmenorrhœa,' p. 392), when of trifling dimension. And again, when the uterus is so enlarged by their presence that the organ becomes strangulated as it were in the pelvis, and the functions of the pelvic organs are interfered with, life itself may become imperilled. Under such circumstances relief has sometimes been obtained by pushing up the whole organ above the pelvic brim. This operation is of course preferable to another, of which mention will be made presently—the extirpation of the entire uterus by gastrotomy.

Enucleation of intra-mural fibroids has been performed. Thus in a case related by Dr. Whiteford,* a fibroid situated in the anterior wall of the uterus near the cervix was cut into after the cervix had been dilated, the tumour itself seized a few days later and dragged downwards and finally removed, the patient recovering. Here the hæmorrhages had been very severe. Undoubtedly this is an operation which is to be recommended in such a case.

The sub-peritoneal fibrous growths, pendulous or not in the abdominal cavity, are very rarely proper objects for surgical interference. Occasionally they produce great inconvenience, as when, for instance, a large fibrous pendulous tumour falls down by the side of the os behind the uterus in the pelvis, and in such a manner as to impede delivery in the event of pregnancy. When this occurs, the proper treatment is to push the tumour above the brim of the pelvis, by careful manipulation in the vaginal canal. I have successfully performed this operation. Puncture of such tumours from the vagina has been practised under such circumstances, with fatal results. Again, a mass of fibroid tumours growing from the outside of the uterus may cause retroversion of this organ, and remarkable distension of the bladder with urine (as in a case related at p. 135); in this case, the tumours, together with the uterus, were pushed up out of the pelvis, and the patient thus relieved.

Removal of Fibroid Tumours by Gastrotomy.—This operation has been done, sometimes with the previous knowledge that the

* *Ed. Med. Journal*, Feb. 1870.

tumour was of fibroid character; at other times when the diagnosis was inaccurate, the tumour being supposed to be ovarian and turning out to be fibroid or fibro-cystic. Some few of the cases so operated on have done well. I have operated on one such case successfully, the tumour being very large, but fortunately attached to the uterus by a narrow pedicle. The patient was single, aged 40; there was enormous ascites, for which she had been previously tapped twice, and life was seriously threatened by the exhaustion, dyspnœa, and other effects of the presence of the tumour. The hæmorrhage is difficult to check in many instances, in some the operation could not be completed. Dr. Routh * has collected particulars of 15 cases where gastrotomy was performed with the intention of removing the tumour, but could not be completed. The same author has collected particulars of 33 cases, in which, after cutting into the abdomen, the whole uterus, tumour, or part of either were removed. Of these 33 operations, 23 patients died, 10 recovered. There were 15 cases in which the tumour was for the most part external to the uterus, but not completely so; in 3 enucleation was performed. Here 5 only out of the 15 recovered. The 33 operations include also 9 extirpations when the tumour was parietal, in some cases fibro-cystic: 8 of the patients died. Lastly are included 9 cases where the whole of the uterus and ovaries, together with the tumour, were removed; 4 out of the 9 recovered.

Dr. H. R. Storer has collected statistics of the operation of *removal of the whole uterus* with the tumour, relating to 29 cases, including 2 of his own. The second of Dr. Storer's very interesting papers † on the subject gives the following results: Of the 29 cases, 22 died. The first operation included in the series was Dr. Clay's, in the year 1843, the last by Dr. Storer in 1866. The deaths were due in 6 cases to hæmorrhage, in 8 to shock, in 7 to peritonitis or inflammation; 1 (on thirteenth day after operation) was the result of accident. The operators were thirteen in number.

The only operation of this latter kind, yet performed successfully in this country, was that by Dr. Clay of Manchester (included in Dr. Storer's series). The case was that of a single lady: the tumour had been growing for some years, and for the last three or four years it had been growing in such a way as to fill up the

* *On Fibrous Tumours of the Womb*, 1864, p. 121.

† *Amer. Jour. of Med. Sc.*, Jan. 1866, and *Trans. of Amer. Med. As.*, vol. xvii. 1866.

pelvic cavity. Finally, the patient had become much emaciated, the tumour filled the pelvis so entirely that the finger could not be passed behind it, and there was not even room for the introduction of a bougie in front; and it being evident that life must be brought to an end by the impediment offered to defæcation and micturition, it was determined to remove the tumour. The entire mass, including the uterus and one of the ovaries, was removed, the uterine cervix being cut across just above the os. Two months subsequently the patient was alive and well.

The results of the operation of gastrotomy as applied to the removal of fibroid tumours of the uterus, may be gathered from the foregoing statistics. It appears that the results were most serious when the tumour was found extensively attached to the uterus, its removal necessitating section of large vessels and much hæmorrhage. In some of the cases the hæmorrhage was immediately fatal, in others it broke out anew afterwards. To arrest the hæmorrhage in such cases is evidently most difficult. The removal of the entire uterus with the ovaries appears to be a less fatal operation than the removal of the tumour alone. Here the chief difficulty is also the arrest of the hæmorrhage. It is probable that the mortality from this cause may hereafter be diminished; the actual cautery, which has been extensively employed in dealing with the pedicle by Mr. Baker Brown, may prove available in some instances for this purpose. Every case has difficulties of its own, and the removal of the entire uterus can never be other than a most formidable operation. The operation is most likely to be successful in those cases where it is least necessary, viz. when the tumour has by its size drawn the uterus with it above the brim of the pelvis. In a case where the tumour fills the pelvis, and threatens life by stoppage of the functions of the rectum and bladder, and where such a tumour cannot be pushed up out of the pelvis, the operation may be indicated. It would appear from the records of the cases, that the operation has been performed in several cases when the symptoms hardly indicated so much danger to life as that here supposed. The mere size of the tumour is no guide as to the necessity for extirpation. In cases of fibro-cystic tumour in which the process of softening and breaking up of the tumour is giving rise to dangerous symptoms, extirpation may also be indicated—extirpation of the whole uterus, that is to say. It is plain, from the facts recorded, that the partial removal of a fibro-cystic tumour connected with the exterior of the uterus is

almost certainly fatal, and experience has shown that it would be safer to proceed to remove the whole uterus than thus to leave a part.

Very large fibroid growths sometimes produce comparatively little inconvenience. Thus in a patient under my care the abdomen was filled by a tumour of ten years' growth, extending up under the false ribs, but she was able to walk about with ease. On the other hand, the increase in weakness, the dyspnœa, and general discomfort may be such as to render it evident that the vital organs are seriously embarrassed in their action, and if the patient be at the same time debilitated by profuse hæmorrhages, the risk of an operation would by comparison be diminished.

Respecting the operation itself, the precautions and general management are such as in the operation of ovariotomy; the dangers are the same as those of ovariotomy *plus* the greater risk of hæmorrhage. The loss of the entire uterus is scarcely a loss, seeing that the organ is useless under such circumstances.

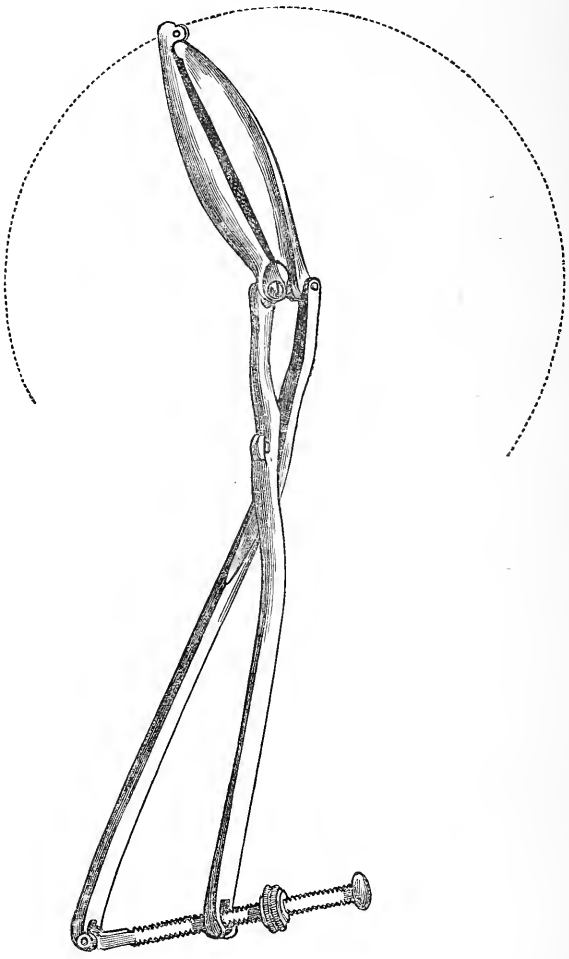
Dr. Storer has published* an account of a new instrument, the 'clamp shield' (fig. 109), which is intended to assist in severe operations on the pelvic organs, such as removal of the entire uterus, by lessening the liability to hæmorrhage, and by rendering the action of the écraseur in sundering the tissues more certain and definite. The blades of the clamp are 4 inches long, the edges are serrated, and the blades are closed by a pair of forceps very strong, and fixed to the blades by a ball-and-socket joint. The arms of the forceps are long, and great compression by this means is possible. The pedicle to be divided can thus be securely held and compressed in a position in which it would be difficult to accomplish the end by any other instrument. It appears probable that Dr. Storer's clamp shield will prove very useful.

General and Palliative Treatment in Cases of Fibrous Tumours of the Uterus.—We know of no means whereby the formation of these tumours can be prevented, and when they are of large size we know of no means—no reliable means, certainly—whereby they can be made to disappear, short of a surgical operation. But much can be done occasionally to diminish the rapidity of the growth of the tumour. The means on which most reliance can be placed are such as tend to diminish the supply of blood to the generative organs. Chronic congestion of the uterus is a condition

* See the second of the two papers just quoted, copies of which were kindly forwarded to me by Dr. Storer.

favourable to the development and growth of fibrous tumours, and by effectually treating this condition, good may thus be done. The use of baths and cold vaginal injections are therapeutic measures of exceeding importance in this respect. Rest in the

Fig. 109.



horizontal posture during the menstrual period, due attention to the state of the bowels—all these are capable of effecting much, and it is probable that if we could only persuade our patients to systematically attend to the directions given, the effects produced

might be considerable. The course of the disease is always chronic, and any one system of treatment is rarely carried out long enough to give its efficacy a sufficient trial. In many cases, even where we have succeeded in giving the patient a great amount of relief, it is difficult to satisfy ourselves that we have effected any considerable or even appreciable diminution in the size of the tumour. It is, however, encouraging to know that, by persevering attention, the progress of the growth of the tumour may be often checked.

The remedies which have obtained the greatest reputation as promoting the disappearance or preventing the growth of fibrous tumours of the uterus are, mercury, iodine, and bromine. The bichloride is usually the preparation of mercury employed; and it is given in small doses, extending over a considerable time. The remedy is undoubtedly useful in many cases. With reference to iodine, bromine, and the various preparations containing these ingredients, there is perhaps more to be said. Thus, the waters of Kreuznach have been largely employed in treating the affections now under consideration; they have been employed both internally and externally.* The results obtained in many cases are decidedly encouraging, although the good effects have often been considerably overrated. The good effected in very many cases appears to be rather the removal of the morbid congestion of the uterus, and the improvement of the health generally, than any great diminution in the size of the fibrous tumour. And, indeed, it is probable, as has been already remarked, that if we can so far improve the patient, we do all that lies in our power—short, at least, of actual surgical interference. It is therefore no real disparagement of the Kreuznach water treatment, or other therapeutic measures of the same kind, to say that they may be expected to fail in actually removing fibrous tumours of the uterus. By administering the waters internally, by employing daily hip-baths and injections of the same, we obtain all the good effects. The conjoined use of bromine and iodine in the following manner may be recommended: The patient is to take, twice or thrice daily, bromide of potassium, beginning with ten grains for a dose, while over the lower part of the abdomen an ointment containing iodide of potassium is rubbed in once or twice a day. At the same time, the other measures, baths, &c., must not be omitted. In one case, where a very large fibroid growth was present, I kept the patient continuously in a state of slight mercurialism, at the same time

* The Woodhall Spa is now acquiring celebrity for the same purpose.

that she was taking bromide of potassium, and rubbing in the iodide of potassium for nearly a year with very slight intermission. The measurements of the abdomen, carefully taken, had in a few months undergone marked diminution. The case was accurately observed, and the reduction in size was certain. Following Dr. Rigby's recommendation, Dr. M'Clintock has given an extended trial to chloride of calcium (thirty to forty drops of the 'liquor calcii chloridi' of the Dublin Pharmacopœia three times a day in a bitter infusion), and in one instance its prolonged use was followed by a complete cure.*

The prolonged use of ergot appears to be likely to be attended with advantage. Thus I saw with Dr. Brunton about three years ago a lady who was the subject of an enlargement of the uterus the size of the fœtal head, or nearly so. It was apparently a *parietal* fibroid tumour, and no surgical interference seemed admissible. Dr. Brunton informs me that under the use of ergot the uterus has now (Dec. 1871) very materially diminished in size.

I have in two or three cases employed injections of acetic acid on the method suggested a little while ago by Dr. Broadbent, but the tissues of these fibroid tumours are too dense to allow of any injected fluid acting on the tumour except to a very limited extent.

The hæmorrhages dependent on the presence of fibrous tumours constitute a very important class of symptoms. The most severe forms of hæmorrhage attend the presence of polypus or polypoid growths. The effect of the operation of incising the os uteri has been already alluded to. With reference to the palliative treatment of hæmorrhage due to this cause, tincture of cannabis indica is spoken highly of by Dr. M'Clintock as a remedy; in a case related by Dr. Tanner, mercury was the only remedy which had an effect in restraining the hæmorrhage, and the patient was more than once saved from death by its use.† The preparation given was the bichloride ($\frac{1}{16}$ of a grain every six hours). Further observations on the subject of the treatment of hæmorrhage, and which are applicable to these cases of fibroid tumour or polypus, will be found at pp. 352 *et seq.*

Various other symptoms produced by the presence of fibrous growths in the uterus require attention. Pains very much resembling those of labour are frequently observed, and require mitigation by means of opiates. Such pains are often of good

* *Op. cit.* p. 141. † *Obst. Trans.* vol. iii. p. 13.

augury in the case of polypus, inasmuch as they have occasionally the effect of expelling the polypus from the uterus into the vagina, whereby the removal is facilitated. Micturition and defæcation are frequently very much disturbed by the presence of fibroid growths in the uterus, and it is often necessary to devise means for enabling the patient to obtain proper and regular action of the bowels. The bladder is less constantly affected by the presence of the enlarged uterus in such a degree as to render aid in the evacuation of its contents necessary.

CHAPTER XXIV.

CANCER OF THE UTERUS, VAGINA, ETC.

Cancer a frequent Disease of the Generative Organs in Women—Etiology considered—Influence of Age—Influence of Child-bearing and Marriage—Statistics—Antecedent Conditions—Its Hereditary Character—Mr. Moore's Opinions on Varieties of Cancer of the Uterus—Medullary—Cauliflower Excrescence—Part of Uterus usually affected—Extension to other parts—Symptoms—Duration and Fatality of the Disease—Cancer of Vagina.

Diagnosis—In early Stage—In advanced Stage—By aid of Speculum.

Treatment—Excision of the Cervix in Cauliflower Excrescence—Mode of Operating—Treatment of other Forms of Cancer of the Cervix — Excision — Bromine — Injection of Acetic Acid—Palliative Measures: To check Hæmorrhage and Discharges; to relieve Pain; to support the Patient—The Prognosis—Treatment of Cancer of the Vagina or Bladder.

Cancer of the generative organs is undoubtedly the most formidable affection to which women are liable. Cancer, which experience has led us to regard justly with fear and apprehension, appears to attack women more than men, but in women the generative organs—the breast or the uterus—are a very favourite seat. In about 23 per cent. of all cases of cancer, the location is the uterus or the breast (uterus 18·5 per cent., breast 4·3 per cent., Virchow; uterus 15 per cent., breast 8·5 per cent., Marc d'Espine).

Influence of Age.—Cases of uterine cancer are noticed, for the most part, after the age of 30. The larger number of cases occur between the ages of 40 and 50, and about 1 per cent. of recorded cases occurred after the age of 70.

The following is a table given by Dr. West,* as containing the results of his own observations combined with those of Lebert, Kiwisch, Scanzoni, and Chiari:—

Between	25	and 30	years . . .	26 cases
,,	30	,, 40	,, . . .	120 ,,
,,	40	,, 50	,, . . .	183 ,,
,,	50	,, 60	,, . . .	73 ,,
,,	60	,, 70	,, . . .	35 ,,
	Above	70	,, . . .	5 ,,
			Total . .	442

* *Lectures on the Diseases of Women*, 2nd ed. p. 368.

The following is an account of 54 cases observed by myself at University College Hospital, given in quinquennial periods:—

Between	28	and	30	years	.	.	2	cases
„	31	„	35	„	.	.	12	„
„	36	„	40	„	.	.	8	„
„	41	„	45	„	.	.	16	„
„	46	„	50	„	.	.	8	„
„	51	„	55	„	.	.	4	„
„	56	„	58	„	.	.	3	„
				Total	.	.	53	

The earliest instance I have seen was a case in private practice, where the disease began at the age of 23. The patient married at the age of 15, and had had two children, the youngest æt. 5.

In 156 cases reported on by Mr. Sibley,* the average age at which the disease began was 43·28.

Before the age of 25, then, uterine cancer is a rare disease. Dr. Churchill states that he has witnessed a fatal case in a woman under 25; and the same authority refers to two other cases—one by Wigand, in which the uterus was affected with scirrhus at the age of 14; and another by Mr. Carmichael, fatal at the age of 21. In Madame Boivin's table, 12 cases out of 409 are set down as under 20 years of age; but these cases of early cancer related by Madame Boivin are justly objected to, as probably not being cases of cancer at all. The youngest of Scanzoni's cases was 23 years old.

The opinion of Dr. Walshe, of Mr. Paget, and others, is, that the proclivity to cancer generally increases steadily and progressively with the age. It is to be remarked that, after the age of 50, the frequency of *cancer uteri* appears to diminish; but the diminution is rather apparent than real, for it must be remembered that the proportion of individuals living, and therefore available, so to speak, for cancer, every year becomes less and less.

Influence of Marriage and *Child-bearing*.—It is a disputed point whether uterine cancer is most common in women who have had children, or in those who have had none. Dr. West says,† 'Though ample proof to the contrary has been long since 'adduced, we still find it asserted sometimes that single women 'and those who have had no children are most liable to be

* *Med.-Chir. Trans.* vol. xlii.

† *Op. cit.* 2nd ed. p. 370.

'attacked with cancer. The truth appears to be the direct reverse 'of this statement. . . .' Scanzoni gives it as his opinion that, in a certain degree, sterility predisposes to the disease. The statistics of these two observers give the following results:—Of 131 married women affected with cancer, 8 were sterile (West). Of 108 married women affected with cancer, 36 were sterile (Scanzoni). All, however, including Scanzoni, agree in considering that, in women who have had *many* children uterine cancer is more likely to occur, and this accords with my own experience. Thus, in Dr. West's 123 cases of cancer, in which the marriage was fruitful, the average number of pregnancies per case amounted to 6·8. In Scanzoni's 72 cases, the average number of pregnancies per case was 7·01. The average number of children per marriage in this country, given by Dr. West, is 4·2—an average certainly much exceeded in the cases of cancer uteri recorded by him, and still more so in the cases of Scanzoni. Mr. Sibley's researches, also the statistics of Dr. Tanner,* tend in the same direction.

The influence of *marriage* seems important, judging from the facts in my somewhat limited number of 54 cases: thus—

Of 5 cases, there is no note taken as to whether married or not.

In 48 cases, the patients were married.

In 1 case, the patient was single (but had had a child).

In these cases, then, it is remarkable that in 49 cases where it is known whether the patient had been married or not, 48 were married, and the single exception was a patient who, though not legally married, had been married in the sexual sense. This would seem to give reason for the belief that sexual intercourse is not without influence in the etiology of uterine cancer.

Then with respect to the influence of child-bearing, the analysis of my 54 cases gave the following results:—

In the 40 women who had had children, the total number of children was 179, or about $4\frac{1}{2}$ children to each, very little in excess of the average number of children in non-cancerous cases, as estimated by Dr. West.

1	patient	had had	12	children,	
1	,,	,,	10	,,	
6	,,	,,	9	,,	
2	,,	,,	8	,,	
2	,,	,,	7	,,	&c., making a total of 179.

* *A Clinical Report on Cancer of the Female Sexual Organs.* By T. H. Tanner, M.D., Lond. 1863.

It is noted further that there had been 10 miscarriages.

It is noteworthy that 7 patients had had *no* children. Of three patients who had been married there is no note as to children or not.

So far as these cases go they would seem to indicate sexual intercourse rather than excessive fertility as a predisposition to uterine cancer.

Other Antecedent Conditions.—Mr. Moore, in a philosophical essay on the 'Antecedent Conditions of Cancer,'* adduced important facts and considerations tending to show, in his opinion, that cancer has no dependence on any malady existing anteriorly to the appearance of the first tumour, but that it originates in persons otherwise healthy and strong. The existence of an antecedent general malady is, he considers, pure conjecture. Further, the evidence, in Mr. Moore's opinion, shows that 'the very large 'majority of cancers spring up without traceable hereditary in-'fluence, and the very large majority of such instances of the 'disease which are thus independent of the ancestry of the person 'affected, are also not transmitted to any of the offspring. For 3 'patients affected with cancer, 97 parents (who yet have a cancerous 'relative) and 97 children go free.' The disease is primarily a local one. Mr. Moore does not deny altogether that the disease is hereditary, but he believes that it is only rarely so. That there is a previous diathetic condition, or a disposition in the economy which may determine the first formation of the tumour, Mr. Moore also admits, in accounting for those cases where cancer has appeared to originate from a blow. He quotes Broca, who says, in reference to such cases, that 'here we must admit the 'existence of a previous disposition in the economy before the 'local accident which determined the formation of the tumour; the 'diathesis hovered as it were over the organism.' He expresses his concurrence in these views.

Mr. Moore argues, further, that the disease can always be traced to a period when but one tumour existed; that the spread of the disease is a mechanical one, its apparent re-appearance in the same place after removal being probably due to an imperfect operation; that its appearance in internal organs after complete removal of the primary tumour does not prove that it originated of itself in such internal organs *after* the operation; that while in a few instances the hereditary character of the disease is well marked,

* *Brit. Med. Journal*, August 20, 1865.

in the great proportion of cases it is a personal disease, and not capable of transmission.

The arguments used by Mr. Moore are worthy of attentive consideration. It appears evident that the hereditary character of the disease is not so commonly substantiated as has been supposed, while in a few instances (3 per cent. of the cases) this hereditariness was extremely well marked. When hereditary, the disease appears to gather intensity as it descends, for it appears earlier in the daughter than it did in the mother, earlier still in the grandchild. Mr. Moore's belief that cancer for the most part originates in strong rather than tainted constitutions may be true in one sense of the word. The individual may be *apparently* strong and healthy, but not strong and healthy *quoad* the liability to this disease. It is quite true that at present we are unable to point out what it is that distinguishes an individual about to develope cancer, from another who is to be free from it; but the advance of medical science will, it is to be hoped, clear up this important point. One thing is evident, the great necessity for the early detection of the disease, facts being in favour of the idea that if we could more frequently be made aware of its existence, there might be a fair chance of doing the patient much good in a considerable proportion of cases.*

As regards the etiology of uterine cancer, the antecedent condition of system which has been present in the cases which have fallen under my own notice has been various. In some, the individual was in apparently good health, but in many the state of things was the reverse. Prolonged anxiety, depression of the general health, and an evidently low state of vital power, I have

* With respect to the effect of removal of a cancerous tumour on the duration of life, Mr. Birkett's facts are of great interest. The seat of the cancer was the breast. Of 150 patients who had it removed there survived

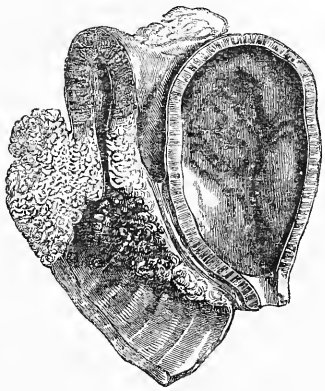
Under 1 year	8	Above 10 years	2
Over 1 „	24	„ 11 „	2
„ 2 „	38	„ 12 „	1
„ 3 „	17	„ 13 „	1
„ 4 „	21	„ 14 „	2
„ 5 „	7	„ 15 „	1
„ 6 „	5	About 23 „	1
„ 7 „	1	„ 29 „	1
„ 8 „	4	„ 32 „	1
„ 9 „	4		

Whereas of 100 patients not operated on there died within first year, 14; survived 10 years, 3; of these, 2 about 26 years. The average duration of life being about 3½ years.—*Brit. Med. Journ.* Sept. 29, 1866.

certainly been induced to regard as rather frequent antecedent conditions. Prolonged and excessive lactation is, I believe, a common antecedent of uterine cancer; the great debility and bodily prostration thereby produced has been apparently connected with the occurrence of uterine cancer in several instances under my own observation. And as I have already stated, the facts relating to 54 cases have suggested to me the importance of sexual intercourse as a predisposing element.

Varieties of Cancer.—The form of cancer usually witnessed in the uterus is the medullary cancer. The 'epithelial' comes next in order of frequency.* The medullary form of cancer attacks, in common with other forms of cancer, the lower part of the uterus

FIG. 110.†



first, in by far the majority of cases. The epithelial form is witnessed in the superficial and exposed portion of the cervix uteri, and it has been known, ever since the name was given to it by Dr. John Clarke, as the 'cauliflower excrescence of the os uteri.' It does not appear that, so far as the anatomical part of the question is concerned, the two diseases differ essentially; we find in both, on microscopic examination, cells and formations, which equally indicate the presence of cancer. The difference in the physical characters, evident to the touch and the unassisted eye,

* An excellent account of the post-mortem appearances in 58 cases of uterine cancer, by Mr. Henry Arnott, will be found in the *Pathological Transactions* for 1870.

† Fig. 110 (from Martin's Atlas) represents the uterus and vagina affected with cancer.

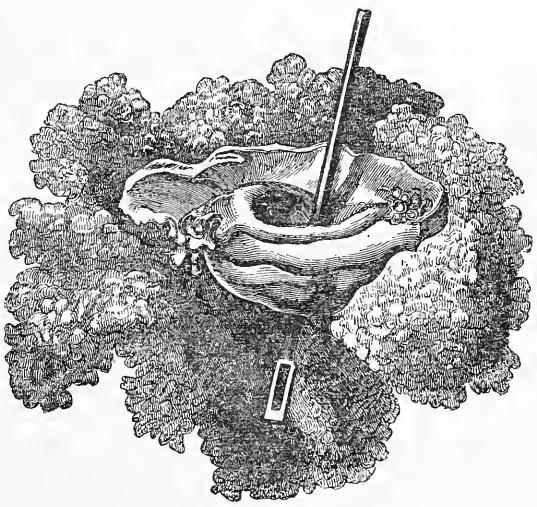
in the two varieties of the disease, appears to depend on the different anatomical arrangement of the tissues affected in the two cases. So that a case of cauliflower excrescence is one in which the cancer attacks simply the surface of the cervix uteri; but a case of cancer of the medullary form is one in which the disease attacks the tissues of the cervix more deeply, producing a very noticeable *hypertrophy* of the parts affected in the first instance, which spreads into and invades the adjacent parts, including the free surface. The two diseases frequently exist together; it being a matter of common observation, that in patients with the cauliflower excrescence, although the disease may appear limited to the os for a time, the medullary form of the disease generally afterwards attacks the uterus, and thus causes death. In the cauliflower excrescence (see fig. 111), the villi covering the cervix become hypertrophied, the vessels with which they are supplied exceedingly enlarged, and forming loops; each villus is found to contain cells of every form: nuclear, formative, caudate, mother-cells, spindle-shaped or nucleated fibres, and binucleated cells, also cells in a state of fatty degeneration. A thick layer of epithelium covers the whole. The cauliflower excrescence thus owes its shape, texture, &c., to the original configuration and relations of the villi covering the cervix uteri. The microscopic appearances in the other class of cases it is unnecessary to allude to.

The characters of the *cauliflower excrescence of the os uteri* are as follows:—from the greater part or the whole of the circumference of the os uteri a somewhat soft granular mass grows downwards into the vagina, at the centre of which is the aperture of the os, and above which is felt a narrowed constricted portion, the junction of the vaginal portion of the cervix with the vagina. The size varies. The more usual circumstance is that it escapes detection at an early period of its growth, owing to the symptoms at first produced being slight; and when first discovered it may be so large as to fill the upper part of the vagina. It may grow to such a size as to reach to the ostium vaginæ. Ordinarily, the growth consists of several portions, each of which is lobulated in shape, and separated by a fissure from the adjacent portion. One lip of the os is usually larger than another, and sometimes it is not at first easy to distinguish the orifice of the os between the mass of tumours in question, some of which may be as large as an apple, others smaller, but all attached to, and continuous with, the margin of the os uteri. If the patient be examined at an

early stage of the growth, the os is found slightly puffed out, softer than usual, and presenting a granular feel. If the examination be made at a later stage of the disease, the vagina may be found filled and distended by a large spongy mass. At a still later period the growths may have partly disappeared, having ulcerated away, and then the os uteri may present the changes met with in the ulcerative stage of ordinary cancer of the uterus, together with those just mentioned. And in not a few cases, when the patient is for the first time examined, it is found that while presenting well-marked tumours of the cauliflower kind, the cervix itself is hardened, greatly thickened, and the uterus more fixed than usual. We may find that above the situation of the excrescences, the cervix uteri forms a pedicle comparatively healthy in structure; the pedicle may, however, be very short, and hardly to be felt. It not unfrequently happens that growths similar to those proceeding from the os uteri are found situated on the vaginal walls, in proximity to the os uteri.

The cauliflower excrescence of the os uteri is soft to the touch, unless under the constricting influence of astringent injections;

Fig. 111.



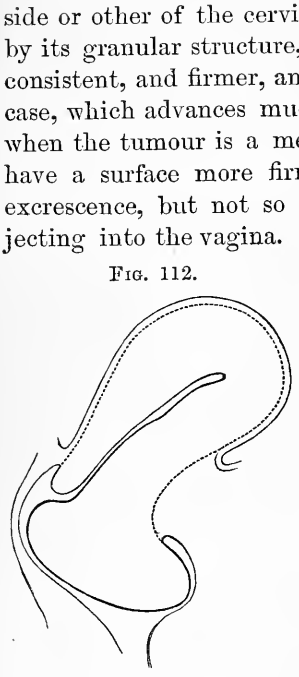
it has a peculiar granular feel, bleeds easily when touched, or after intercourse, sneezing, or straining; and an almost constant symptom is the presence of a copious watery, and latterly fœtid, discharge from the vagina. The drawing (fig. 111, after one in Sir

J Y. Simpson's Lectures) represents a large mass of this kind and its relation to the os uteri. The characteristics of this condition are physically those above stated; the one on which most reliance is to be placed diagnostically is the origin of the mass from *all*, or the greater part of, the circumference of the os uteri. The soft pulpy mass may give to the finger a sensation like that experienced on touching the os uteri in cases of placenta prævia, but the other circumstances present would hardly admit of the two conditions being confounded.

The symptoms of this disease are frequently very indistinct at first. The distinctive signs, watery offensive discharge, occasional bleeding, &c., may not show themselves early in the disease, or, if observed, they may be so slight as not to attract particular attention, and thus a considerable time may be lost before the disease is detected, or its presence even suspected.

Another form in which cancer may be found growing from the os uteri is the *medullary tumour*. From it the cauliflower excrescence is distinguished by its regular and extensive attachment or departure from the os, the medullary tumour growing from one side or other of the cervix, and being more or less pedunculated; by its granular structure, that of a medullary tumour being more consistent, and firmer, and lobulated; and by the progress of the case, which advances much more rapidly to a fatal termination when the tumour is a medullary one. These medullary tumours have a surface more firm and even than that of the cauliflower excrescence, but not so firm as that of a *fibrous polypus* projecting into the vagina. From the latter tumour it would also be distinguished by the nature and the mode of attachment, the pedicle of the polypus being surrounded by the os uteri, whereas the medullary tumour grows from the side of the os, and not from the interior of the uterus. Profuse hæmorrhages, fœtid discharges, &c., may be observed equally in cases of medullary tumour, and of polypus. In those cases of polypus where the tumour is so large as to fill the vagina, or where the surface of the mass is apparently or actually adherent at the os, the diagnosis might be attended with difficulty. The presence of a large medullary mass growing

Fig. 112.



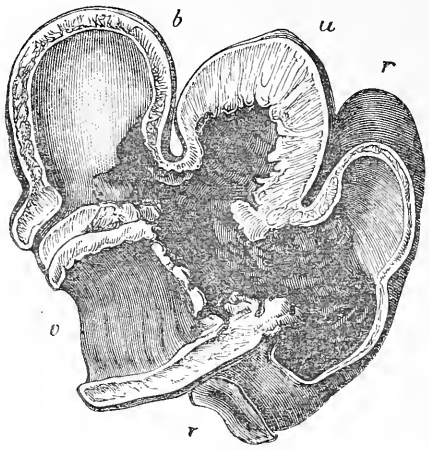
from the os uteri is not, it must be remarked, a common phenomenon in cases of cancer of the uterus. The drawing (fig. 112) represents a tumour removed by me in University College Hospital, June 1866. On microscopic examination it proved to be malignant, although smooth and tolerably hard. The patient subsequently (Feb. 1867) appeared again, and the uterus was then affected with carcinoma.

When cancer attacks the surface *alone*, it appears that it may be for a very considerable time restricted to that part, though this is rare. The most common event is that the disease attacks simultaneously the superficial and the deep parts of the cervix uteri, with the result that there is cauliflower excrescence of the os and infiltration with medullary cancer of the cervix itself. In some rather rare instances, however, while the cervix remains apparently sound and healthy, an insidious invasion of the upper part of the uterus, by carcinomatous deposit, occurs. Dr. West met with this affection in 2 out of 120 cases of uterine cancer. Sir J. Y. Simpson considers that about 2 cases out of 30 of cancer of the uterus are of this kind. The deposit may be observed in the outer layer of the middle coat of the uterus, or in the sub-peritoneal or peritoneal coat; or attacking the whole thickness of the uterine walls; or in the mucous or sub-mucous coat of the body or fundus uteri. In both of Dr. West's cases 'the enlarge-'ment of the uterus was very considerable; in one it measured six 'inches in length, and in the other was nearly as large as the adult 'head.' From the uterus the disease spreads to the adjoining tissues at the upper part of the vagina; the glands in the pelvis become affected. The bladder is not seldom involved (see fig. 113), one result being vesico-vaginal fistula. Not long since I saw a lady in whom the uterus had apparently become blocked up by extension of the disease to the fundus of the bladder, death resulting apparently from rupture of the dilated ureters into the abdomen. The disease may extend into the rectum; all these organs—the vagina, bladder, and rectum—may be found in communication with each other in consequence of the ulceration of the cancerous infiltration. Indeed, the condition to which the unfortunate patient may be reduced by this dread disease is often as deplorable as it is possible to conceive. Death itself is preferred to the continuance of such unmitigated and unrelievable distress.

The *general symptoms* present in cases of uterine cancer vary according to the stage of the disease. Ordinarily there is pain, seated in the uterus or near it, and more or less constant; but by

no means invariably. It is yet a question whether such pain actually precedes the development of the tumour; probably it does in the majority of cases. The disease progressing, the patient

Fig. 113.*



becomes evidently ill; she has a peculiarly worn expression in many cases, but not always; the tint of the skin is often sallow,† but chiefly when there have been frequent losses of blood. Later on the patient suffers from indigestion often exceedingly intractable in form: vomiting or nausea is not rarely witnessed. Hæmorrhage is common; (see p. 337). Sanious, watery, puriform, or offensive discharges, almost invariably present at some stage or other of the disease, are signs also of great importance.

Duration of Cancer of the Uterus.—Lebert gives an average of sixteen months; Dr. West found the average duration to be fifteen months. Hence, in a given case, if we are informed that the patient has been subject to irregular (*i.e.* non-periodical) hæmorrhages for upwards of two years, this fact would be against the probability of the hæmorrhage being due to cancer uteri. It is right here to mention that Sir J. Y. Simpson's experience appears to have led him to fix a longer period as the ordinary duration of cancer uteri. 'Patients usually die in from two to two years and a half after the detection of the disease,' says this author.‡ Ac-

* Fig. 113 (from Dr. Arthur Farre) shows the bladder, uterus, and rectum simultaneously affected with cancer.

† See 'Examination of Os Uteri.'

‡ *Med. Times and Gaz.* Jan. 15, 1859.

cording to the same authority, where the disease occurs in aged persons, and has taken on a slow and senile character, its course may be very protracted.

The fatality of cancer of the uterus is not the same in all cases. When the body of the uterus or the tissues of the cervix are affected, and have begun to ulcerate, the disease usually progresses rapidly. How long the stage previous to this may last, we have no direct evidence. When the surface of the os only is affected (cancroid or cauliflower excrescence), the disease is by no means so quickly fatal. One of the most valuable facts in reference to this question is given by Sir J. Y. Simpson * in his 'Lectures on Diseases of Women.' The patient, the subject of the case, had a large cauliflower excrescence the size of an egg removed eighteen years previously. Since that period she had had five children, and was still alive. With reference to this case it should be stated that no 'caudate or spindle-shaped bodies' were found in the tumour removed. We know as yet nothing of the effect of removal of the cancerous tumour when affecting the substance of the cervix: it is evident, however, that life is prolonged by removal of cancroids limited to the os uteri.

CANCER OF THE VAGINA.

Cancer of the vagina is far less frequently met with as a primary affection than cancer of the uterus. But the disease is now and then met with here primarily. It invades the vagina not unfrequently by extension from above. Thus in 54 cases of carcinoma uteri observed by me in hospital practice, the vagina is noted as being affected as well as the uterus in 11 cases. In some of these 11 cases it appeared as if the disease had begun in the vagina. In one case in private practice the vagina was very extensively affected, while the uterus gave very little indication of participating until later on.

The disease occurs (when primary or secondary) as an infiltration in the vaginal wall, or it may begin as a papillary growth of villous character on the free surface. By the finger the physical condition discovered may thus vary exceedingly. The vagina may be so blocked up that the passage of the finger at its entrance is very difficult indeed. The bladder or rectum become later on perforated or not according to circumstances. Another

* *Med. Times and Gaz.* 1859.

effect is that the ureter on one side may become so compressed that the functions of the corresponding kidney are arrested.

Diagnosis in the early stage.—The diagnosis of cancer of the uterus, in its early stage, from certain other conditions which may produce somewhat analogous physical alterations in the os and cervix uteri, and which may give rise also to symptoms more or less resembling those witnessed in the early stages of this justly dreaded disease is a matter of the utmost importance. A fissured, irregular, indurated, and enlarged condition of the vaginal portion of the uterus and of the lips of the os may proceed from a variety of causes. In *women who have had children*, the os uteri is generally more or less fissured, giving the portio vaginalis a sort of lobulated feel; the number of fissures and lobes varies from three to four, five or six; and in women who have had severe labours, rendering the use of instruments necessary, the os may be found very deeply fissured, the parts having been torn during labour. If the uterus be healthy, however, there is no marked enlargement of the part—on the contrary, there is a tendency to a diminution in its size, the diminution being more marked as the patient becomes older. The fissured condition of the os uteri is thus quite compatible with the presence of health. When, however, in addition to this, the lips of the os uteri are indurated and larger than usual, the whole vaginal portion participating in this condition, this combination is indicative of disease. It may be due to the comparatively harmless *hypertrophy of the uterus* (generally synonymous with defective involution of the organ after childbirth) to a *chronic inflammatory condition of the cervix*, to the presence of *fibrous tumours* in the walls of the uterus, to *carcinomatous deposit* in the substance of the portio vaginalis—the latter being the first in a series of changes which may result in the death of the patient at no distant period—to *tuberculous affection of the cervix uteri*, or to presence of *small fibrous tumours* in the portio vaginalis. The diagnosis between these several conditions is often one of great difficulty, and is only arrived at by an attentive consideration, not only of the physical signs themselves, but of the attendant phenomena, and of the present and past general condition of the patient.

Dr. Henry Bennet, whose searching analysis of the abnormal conditions of the os uteri in relation to the diagnosis of cancer cannot be too highly spoken of, and who first laid down exact rules for the diagnosis of cancer from a condition with which it was formerly very frequently confounded, viz. chronic inflamma-

tory induration, has accurately pointed out some of the diagnostic points in reference to the question now at issue in the following words:—

'When the lobular, knotty, irregular condition of the cervix is 'the result of laceration, and is simply inflammatory, the fissures 'which separate the lobes radiate round the cavity of the os on a 'centre, which is not the case in a cancerous tumour—each sepa-'rate lobe being perfectly smooth in itself, and free from tubercles 'or superficial inequalities.'*

The mere *size* of the lobules indicates nothing of malignant character, provided they be tolerably smooth; the depth of the fissures is of favourable import also when the lobules are smooth. Extreme hardness is often observed when no serious disease is present. Uniformity in the degree of the hardness of the lobules is favourable. Slight excoriation of the surface of the lobules is quite compatible with simple inflammation, or similarly innocuous conditions. A deeply *excavated* ulcer on some portion of the surface would excite apprehension as to the cancerous nature of the enlargement. When the lobulation and enlargement is limited to one side of the os, this may be due to growth of a non-malignant tumour in the substance of the cervix. The smoothness of the tumour, the absence of general signs of disease, absence of bloody and offensive discharges, would generally, but not always, put suspicion of cancer on one side. A quickly growing lobular enlargement of one lip of the os uteri is probably malignant in character.

Time is of great importance in the diagnosis of these cases. An induration and enlargement of the os uteri, which is known to have existed for some years, may be generally pronounced to be non-cancerous.

Negatively, the points now alluded to are of great diagnostic value. Thus, supposing the patient to be suffering from pain, offensive discharge, occasional hæmorrhages, &c., and suspecting herself to be the subject of cancer, a very simple examination might, by revealing an absence of all induration or enlargement of the os uteri, render it almost certain that the case was not one of cancer. The rare occurrence of cases in which the disease begins in the fundus uteri prevents this rule being quite absolute.

Unquestionably the most important, and perhaps the least fallacious guide to the diagnosis in a doubtful case, is the mobility or immobility of the uterus—a point which has been already

* *On Inflammation of the Uterus*, 4th ed. p. 90.

alluded to; and when the uterus is found to be as movable as usual while there is an absence of induration in the cellular tissue before and behind the cervix uteri, no considerable pain, no offensive discharge, no particular constitutional derangement, we may safely conclude that the case is not one of cancer. The immobility due to pressure of tumours within the pelvis must not be confounded with the condition produced by cancerous disease of the uterus itself. Lastly, it must be recollected that mobility of the uterus is not necessarily and always lost, even in advanced cases of cancerous disease, although as a rule it is so lost.

With all the helps to diagnosis which have been mentioned, several cases will remain of which it may be for some time difficult to determine the true nature, and to say whether the diseased condition of the cervix be of malignant or of non-malignant character. The inequality of the induration present is generally an indication of malignant disease. Again, the fissures which separate the lobes of the os may be at an early period of the disease smooth at their edges, as in the non-malignant form; but they soon assume a sharply distinct shape. Hæmorrhage from the generative organs is a symptom of cancer usually observed at an early period, but hæmorrhage may be entirely absent, the catamenial discharge only being slightly increased. The value of 'hæmorrhage' as a symptom of cancer has been discussed at p. 337. Another symptom also early observed is pain in the uterine and lumbar regions—not merely discomfort, but actual pain. Weakness and general debility may be observed also from the very commencement. The importance of time has been alluded to, and much aid will be derived from observation of the progress of the case in making a diagnosis. Thus, if a thickened, fissured, indurated condition of the os uteri have existed in a particular case for a considerable time, say twelve months, and no particular disturbance of the general health be observed, it is highly probable that the affection is not malignant. It is not in the nature of cancer affecting the substance of the cervix uteri, and giving rise to physical changes, such as those described, unless under very exceptional circumstances, so long to delay its progress.

In the diagnosis of cancer at an early period, Dr. Montgomery laid particular stress on a shotty condition of the margins of the os, associated with turgidity, and with a crimson discoloration of the os tincæ generally. In the first stage of cancer of the uterus, Dr. Bennet states that he would expect to find 'shot-like, pale 'indolent indurations, all but insensible to pressure, strewn

'irregularly over the cervix, or an irregular hard tumour 'similarly characterised developed on its surface.' In a case related by Becquerel,* there was a small, hard, violet-coloured tumour, projecting from the surface of the cervix at a very early stage of the disease. It was unequal and nodulated. The condition of the os in the early stage of cancer in a few cases in which I have had the opportunity of getting accurate information on this point was as follows: nodular irregular eminences, the mucous membrane covering them having a livid or deep blue colour, and contrasting with adjacent structures not yet affected with induration and irregularity of contour. This applies to cases of cancer commencing in the substance of the os uteri, and not to cases of cauliflower excrescence when the disease attacks primarily the papillary structures on the surface.

The largely patent condition of the orifice usually present in cases of cancer is not peculiar to it, as already remarked.

The presence of a fœtid discharge from the vagina is too often looked upon as indicative of cancer. Wherever there is hæmorrhage, there may be fœtid discharge due to decomposition of clots of blood which have been detained. (See p. 450.)

There may be a healthy condition, or a comparatively healthy condition at least, of the os and cervix uteri, and still cancer of the uterus may be present, the disease being confined in some rare cases to the body or fundus uteri. In such cases, a digital vaginal examination might reveal little or nothing. If the patient present constitutional signs, like those of cancer, with occasional hæmorrhages, profuse and continuous fœtid discharges, watery or purulent, while no alteration of the os and cervix is revealed by examination, cancer of the fundus uteri should be suspected. The upper part of the uterus is generally much enlarged in such cases, and may be felt so enlarged above the pubes. (See 'Examination of the Abdomen.')

In conclusion, it should be borne in mind that the condition of the os and cervix, to which the previous remarks apply, is one simply of induration, slight enlargement, and lobulation. Ulceration, marked loss of substance, associated with hardening, &c., is a condition to which the remarks in question are not at all applicable.

Irregularity, unevenness, &c., in different parts of the vaginal portion, may be due to presence of *small rounded tumours*

* *Traité Clin. des Maladies de l'Uterus.* Paris: tome i. p. 321

embedded in the tissue of the cervix. Such tumours, which are of fibrous character, might give rise to suspicion of cancer, from the fact that one side of the cervix would under such circumstances be hard or nodulated, and the other side soft and natural. These tumours are, however, very rare: they are of slow growth, give rise to little inconvenience, and never to grave symptoms, such as are observed in cancer.

Tuberculous enlargement of the vaginal portion is a condition of exceeding rarity. It is characterised by presence of tumours of uncertain size, of rounded form, at first firm, afterwards softer, yielding to the pressure of the fingers, and indistinctly fluctuating; always accompanied by considerable engorgement of the cervix uteri. It is a condition due to presence of masses of tubercle yet unsoftened, to tubercular infiltration, or to inflammatory action attendant on softening. * Occasionally are seen small yellow deposits on the surface of the cervix the size of a split pea, or smaller, and giving issue, on being pricked, to a small quantity of matter of the consistence of pus. These deposits, which have been alleged to be tuberculous, Dr. West, the accuracy of whose description of them I can quite confirm, looks upon as due to hypertrophy of the Nabothian follicles.

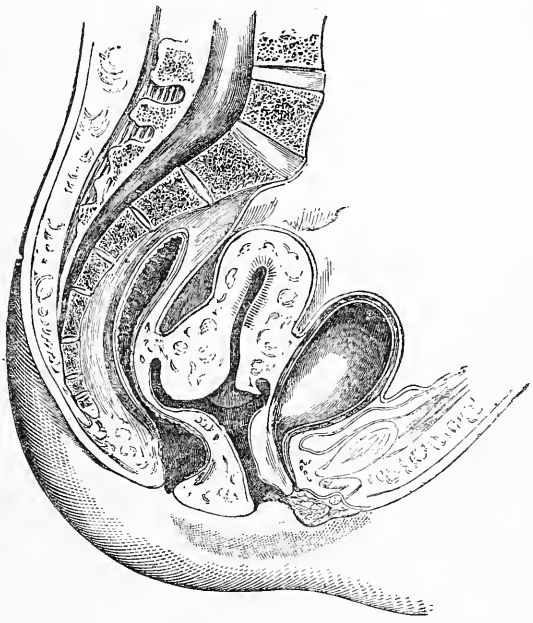
Practically, the importance of the question at issue is not great. The existence of tubercle of the cervix is denied by Rokitansky; it is certain that tubercular infiltration of the cervix with tubercular softening, &c., is very rare. I believe, however, that in women of tubercular tendency, and in whom the cervix uteri is sometimes found enlarged, hypertrophied, and indurated, this enlargement is of tubercular origin, though, anatomically speaking, there may be no deposit of tubercle. I have in private practice seen cases which might be referred to this category. This is a point which is, however, more interesting in connection with the subject of treatment than that of pathology.

Diagnosis in the later stages.—The condition of the parts characterised by the presence of *irregular enlargement, induration, destruction, and loss of substance of the vaginal portion and of the lower part of the uterus, all more or less combined*, is that present in the ulcerative stage of cancer of the uterus; and it is a condition which is so characteristic, that it can hardly be mistaken for anything else. The degree to which the destruction of substance is found to have proceeded varies very much.

* Robert's description, quoted by Dr. West, *Op. cit.* p. 362.

The os uteri may be found to have lost its natural shape, or the vaginal portion has wholly disappeared, and the finger passes into an excavation with hard irregular walls, which are constituted by the remains of the vaginal portion, or by the carcinomatously-infiltrated cellular tissue at the upper part of the vagina. Above is felt a hard irregular mass, the somewhat enlarged uterus, fixed and immovable, and not easily definable from the surrounding hardened structures. A not unfrequent condition of the os uteri in cancer is presence of a hard, smooth, sharply-defined surface, just as if a piece had been actually removed by the knife, leaving the edges well marked. Such a condition is represented in fig. 114, showing at one part of the os nodular projections, at another the

Fig. 114.*



peculiar condition just described. 'When you feel,' says Sir J. Y. Simpson,† 'a rough irregular excavated or anfractuous ulcer seated on a hardened base, and surrounded by hardened tissue,

* Fig. 114 represents carcinomatous infiltration of the posterior lip of the os uteri, also ulcerative destruction of the anterior lip.

† *Med. Times and Gazette*, Jan. 15, 1859.

cancer is present.' The process of ulceration may be found to have extended to the rectum, in which case fæces and flatus pass from the vagina to the bladder, occasioning involuntary micturition; or to both: in the latter case the rectum and bladder open into the common cloaca, resulting from the destructive process which has now been going on. The destructive process may have affected one side only of the os, the other only being as yet enlarged, and denser and firmer than usual. It is not uncommon to find fungous softish masses, which bleed when touched, growing from the already ulcerated surface. This ulcerative stage of the disease is almost universally characterised by the presence of an offensive leucorrhœal discharge, this discharge becoming tinged with blood after examination or after exertion. There is a general failure of the strength of the patient, emaciation, want of sleep, and disturbances of the digestive organs, shown by nausea, vomiting, &c.; and what is important, there occurs from week to week perceptible increase in the intensity of these symptoms, often a very rapid one; the skin of the patient has in some cases a remarkable straw-coloured tint; there are lancinating pains, severe in character, felt in the uterine region: at this period, also, pains depending on pressure of the enlarged uterus on the nerves in the pelvis are very commonly observed, viz., pains along the course of the sciatic and other nerves. Other symptoms attending this stage of the affection are, pains in the breasts, and, not seldom, increased sexual desire. The occurrence of 'hæmorrhages' and the presence of 'offensive discharges' are characteristic, but the value of these as signs of the presence of cancer has already been discussed (see p. 337).

With reference to the value of 'cachexia' as a means of diagnosis, Mr. Sibley, in his valuable 'Contribution to the Statistics of Cancer,'* makes some important remarks.

'The cachexia,' says Mr. Sibley, 'is closely proportionate to the amount of hæmorrhage, discharge, and pain. In cases where there is but little hæmorrhage, and a small amount of discharge, the cachexia is hardly obvious, and this is usually observed even where the cancerous tumour has attained great magnitude. It sometimes happens that the cachexia becomes well marked, even where there is but little hæmorrhage or discharge; but in these cases the cancer is usually found to have involved some important internal organ, and to have interfered with some vital function. On the other hand, in those patients with whom there is profuse discharge,

* *Med. Chir. Trans.*, vol. xlii. p. 194.

and frequent attacks of hæmorrhage, the wasted sallow visage of advanced cancerous disease becomes obvious at an early stage of the complaint. In no class of cases is the cachexia more pronounced than in uterine cancer.' And he has come to the conclusion that 'the presence or absence of cachexia is valueless as an aid to diagnosis. It appears to be the result of a local disease, and is not to be regarded as evidence of a state of system which leads to the production of cancer.'

In a few rare cases destruction of the uterus by cancerous ulceration progresses to a very advanced stage, all the usual symptoms of cancer—pain, offensive discharge, hæmorrhages, constitutional affection—being entirely absent. When cancer of the uterus in the ulcerative stage is present, the diagnosis is not usually difficult when digital examination is practised, those rare cases excepted in which the lower part of the uterus is sound, or apparently so, there being cancerous disease of the interior of the body of the uterus. In these cases, the result of the ordinary digital examination would be liable to mislead, unless corrected by due attention to the more obvious and symptomatic signs of the presence of cancer.

The diagnosis of cancer of the uterus advanced to the stage of ulceration, and presenting to the touch the physical characters above described, is not a matter of difficulty; the difficulty lies, and especially with those whose sense of touch is uneducated, in determining that cancer is *not* present. Thus a patient may present herself suffering a good deal from pain, who is the subject of profuse menstruation, of a profuse discharge, which is, she states, occasionally 'unpleasant' to the smell. On digital examination of the os uteri, a decided enlargement and hardening is felt at one part, and a softer velvety surface at another. But the hardness and induration may be due, as already pointed out, to simple hypertrophy, inflammation or congestion of the vaginal portion: the feeling of the presence of a softer portion may be produced by the inner surface of the os, with its lining in an hypertrophied, shaggy, and villous state.

A peculiar form of destructive ulceration of the cervix uteri has been in a few rare cases observed, all that has been met with on examination being *loss of substance*. The lower part of the uterus has disappeared, and in place of the cervix there is a rough irregular border, above which the body of the uterus, movable as usual, is felt by the finger: there is an 'absence of any thickening, hardness, or deposit of new matter in its vicinity,' as in carcinoma.

(West.) This condition is described as *corroding ulcer of the os uteri*. The symptoms present in cases of this description are not distinctive. Recent writers do not confirm the observations of Sir C. M. Clarke, that the pain is peculiar in these cases. So far as the results of digital examination are concerned, corroding ulcer is characterised by absence of induration in the neighbourhood, by absence of fixation of the uterus, and by the sharpness of the margin of the ulceration. It is an interesting fact that corroding ulcer differs from cancer in respect to its fatality and duration. The observations hitherto made appear to indicate that the disease may continue for some years, indeed for several years. Dr. West believes that the affection ought to be classed with rodent ulcers. On the whole it appears right to consider it a form of cancer.

The diagnosis of the *cauliflower excrescence of the os uteri*, and of the *medullary tumour of the os uteri*, will be gathered from the description of the physical characters of these conditions at p. 535.

Use of the Speculum in the Diagnosis of Cancer.—But little advantage can be derived from the use of the speculum in cases of advanced cancer of the uterus, the diagnosis of which, by the aid of digital examination alone, is not usually attended with difficulty; and, unless employed with great care, the use of the speculum may, under such circumstances, occasion hæmorrhage, and produce mischief of other kinds.

When, however, the os uteri is found on digital examination to be indurated, irregular, and when there is doubt as to whether cancer in its first stage may or may not be present, the use of the speculum may be the means of resolving that doubt. The physical condition of the os and cervix uteri, as felt by the finger, in the early stage of cancer, has been already fully described; it only now remains to give an account of the appearances presented to the sight in such cases.

Respecting the *colour* of the surface in induration due to cancer, there is a difference of opinion; and this arises from the fact that the first stage of cancer of the uterus so very rarely comes under observation. Supposing cancer to be present, and the ulceration to have only just commenced, the ulcer will be found to have peculiar characters: it is excavated and depressed below the surface, the edges irregular, jagged and somewhat tumid, and sharply defined. In chancre, the ulcer is distinguished by its being more superficial, by the absence of enlargement and induration of the tissues beneath and around, by the absence of

general signs of cancer, and by the effects of anti-syphilitic treatment.

Judging by ocular inspection alone, there are undoubtedly cases in which difficulty might occur in deciding between cancerous ulceration and ulceration due to other causes; but it cannot be too frequently repeated that it is by combination and comparison of the general and particular data that a diagnosis must be arrived at. In the case of suspected cancer, more will be learnt from digital examination than by the most careful use of the speculum.

The appearances presented by the os in cases of *cauliflower excrescence of the os uteri* are described by Sir C. M. Clarke as follows: 'There is a striking resemblance between itself and a portion of the upper surface of a cauliflower or a head of brocoli. The surface is granulated, and it consists of a great number of small projections, which may be picked off from the surface as the granules may be detached from the vegetable.' The surface, as seen by the aid of the speculum or otherwise, is of a bright red colour. It is very delicate, and the least touch sometimes suffices to make it bleed. Hence, if the speculum be used, great care must be exercised not to injure the surface. A digital examination affords most conclusively the desired information.

TREATMENT.

In the way of prevention there is not much to be said of a certain and decisive character. Looking at the whole facts of the case, it would appear that in a given patient suspected to be liable to cancer a preventive treatment would be most likely to be successful, which had for its object the placing the patient in the very best condition of health, mentally and bodily, in raising the vital powers and the vital activity to the highest pitch. It is very possible that some individuals, who would otherwise fall victims to the disease, might thus be saved, if we were only able to see far enough forward. A patient supposed to be liable to uterine cancer should not have a large family.

Respecting the treatment of cancroid of the uterus (cauliflower excrescence), most authorities are agreed as to the propriety of removing the diseased structure when the disease is limited to the os uteri, and the uterine tissue above is not affected. Those cases are most favourable for operation where the vaginal portion—at its junction with the vagina—is not thicker than usual, and where consequently the tumour alone constitutes the disease. The

operation may be done also where the cervix is a little enlarged; here the prospect of arresting the disease would be a small one, and the benefit of the operation would be temporary. That the disease is sometimes arrested by amputating the cervix, has already been stated. In other cases, while the patient derives advantage from the operation for a time, the disease attacks the body of the uterus a little later. In many cases cancroid of the os is not recognised until the disease has already spread to the body of the uterus; in some of these cases even temporary alleviation of symptoms follows removal of the decomposing and discharge-secreting mass which is filling up the vagina.

As a palliative measure frequently, as a curative measure occasionally, amputation of the cervix uteri in cases of cancroid of the os uteri is a valuable operation; it may possibly prevent a fatal result altogether, it will almost certainly postpone that fatal result, even when inevitable. The bleeding and the copious exhaustive discharge are at once arrested. The patient would die, or might die, from continuance of these; and, for a time at all events, this source of danger is removed, and comfort and ease are secured to the sufferer.

The écraseur is the best instrument for the operation. The chain or the wire rope may be used; the latter is best when the pedicle is a short one, or when the uterus is fixed. The scissors are preferable to the knife if the écraseur cannot be employed. There is an objection to drawing down the uterus more than can be avoided. Sir J. Y. Simpson believes, probably with reason, that the dragging down of the uterus has been the cause of that fatal shock which has followed the operation in one or two instances. Otherwise the operation is perfectly free from danger. (Other particulars concerning amputation of the cervix will be found at p. 280.)

Perchloride of iron suspended in glycerine should be applied on a piece of lint to the cut surface, and the vagina carefully plugged with wetted cotton wool or other material, if there be any tendency to hæmorrhage.

There are other cases of cancer of the uterus where extirpation of the disease is undoubtedly the best treatment, viz., where the vaginal portion or parts thereof are infiltrated with medullary cancer, the cervix itself at the point of reflection of the vagina appearing sound. Hitherto the operation has been done but little, owing to the fact that the disease is rarely diagnosed at this early stage. I have amputated the cervix in a few cases of

this kind, and the operation will doubtless be practised by others under similar circumstances more frequently than heretofore. When the disease has attacked the uterus above the vaginal reflection, actual removal of the diseased tissue is not practicable unless we extirpate the entire uterus. Could this extirpation be practised easily, the operation would be useless, for the disease has always by this time under such circumstances invaded the neighbouring tissues. The extirpation itself is practically not an admissible operation.

Bromine in solution has been lately used by Dr. Routh and Dr. Wynn Williams, and they speak highly of its effects as a local application in cancer of the uterus. The method of employing it, as described by Dr. Williams,* is to inject into the tissues of the affected part a strong solution of bromine in spirit (12 grains to a drachm) by means of a syringe, at properly selected situations. The vagina requires to be well protected from the action of the caustic, and it is injected about half an inch deep. Disintegration of the parts injected rapidly follows. The bromine must be previously carefully mixed with the spirit. The syringe is of glass with a platinum point. For acting on a broader surface cotton wool wrapped round a piece of stick and dipped in the solution; or a piece of cotton wool soaked therein and kept in apposition by means of a little gutta percha cup, are employed. In all these procedures the vagina is protected by cotton wool soaked in solution of carbonate of soda. Following the treatment a weaker bromine solution is used as a lotion daily.

Acetic acid I have used, following the suggestion of Dr. Broadbent, as an injection into cancerous tissues at the os uteri. The acid dissolves the tissue. As yet, however, sufficient observations have not been made to test the value of this procedure.

We now come to the question of the palliative treatment of cases of uterine cancer, where surgical measures are inapplicable. There are three conditions to the relief of which our attention is necessarily more particularly directed—the pain, the hæmorrhage, and the discharge; and, besides relieving these, we have to devise means for maintaining the functions of the body generally in a state of activity, and for dealing with the many secondary evils likely to present themselves in the course of this disease.

The *hæmorrhage* is to be checked, if slight, by injections of iced water into the vagina and into the rectum; if more severe,

* *On Cancer of the Uterus, &c.* Renshaw, 1868.
† *Brit. Med. Journ.* April 21, 1866.

by application of perchloride of iron or tannin, and by the actual cautery, or, in very severe cases, by plugging the vagina. Sir J. Y. Simpson speaks very highly of the employment of a saturated solution of perchloride of iron in glycerine, the solution being applied by means of a sponge to the bleeding surface, and withdrawn subsequently by means of a string attached to the sponge: it is most valuable. Tannin in fine powder, or tannic acid, may be applied through a small tube, or, better still, in form of a pessary. Tincture of matico is highly spoken of by some authors. If fluids are injected to check the hæmorrhage, care must be taken that they actually come into contact with the bleeding surface. In cases of cauliflower excrescence not admitting of amputation of the cervix, the soft bleeding masses have been sometimes broken up with the fingers, and tincture of iron injected into the centre, and with the effect of checking hæmorrhage and discharge. Dr. Hicks states that he has found a saturated solution of alum holding in suspension tannic acid, applied every day, very effectual in reducing the more tender parts of the tumour in cases of cauliflower excrescence. In some cases which have fallen under my own notice, I was able to effect the same object by applying daily a sponge dipped in strong solution of lunar caustic. To *prevent* hæmorrhage, the patient should, whatever be the nature of the disease, be kept quiet, and especially before and during the catamenial period. Brandy or other stimulants must be given to sustain the patient's strength; and very considerable quantities may be necessary to avert instant dissolution when the hæmorrhage is very profuse. Opium may be very advantageously given at the same time.

The *discharges* present in cases of uterine cancer are often very offensive, owing to the decomposition of the detritus from the ulcerated surface. The frequent use of the douche, by means of which a stream of water is made to pass gently over the affected surface, is the best means which can be adopted for obviating the unpleasantness of the discharge in ordinary cases. Care is very necessary not to push the extremity of the tube against the ulcerated surface, or bleeding may occur. The washing out of the vagina should be performed frequently. The temperature of the water used should be that which is most grateful to the patient. It is often necessary to use a disinfecting fluid as an injection in order to get rid of the offensive fœtor. For this purpose M'Dougall's disinfecting powder, Condy's fluid, chloralum, are all available. Creosote may also be mentioned as a powerful deodoriser.

To render the discharge less offensive, frequent ablutions with or without the use of disinfectants are very necessary; other indications are thus at the same time fulfilled.

The *pain* present in cancer of the uterus is very severe, often exceedingly so, and it must be relieved. For this purpose opium, in that form which is found by experience to be most suited to the patient, must be given, the dose being regulated and the form varied according to circumstances. It is not uncommonly found necessary to give opium in very large doses, the patient having become so habituated to its use that a small dose has no effect whatever. Opium is often conveniently given in form of suppository or pessary. Opium is found most effective when administered in a lavement. Opium, in some form or other, is generally necessary, but other medicines are frequently of great service as accessories. Ether, chloroform, or the two latter combined, cannabis indica, conium, hyoscyamus, &c., are all and each of them of use in certain cases. The application of carbonic acid to the ulcerated surface has been suggested by Sir J. Y. Simpson. The apparatus required is an ordinary quart bottle with an elastic tube fitted to the cork. Eight drachms of carbonate of soda and six of tartaric acid are dissolved in water contained in the bottle, and the gas is thus generated. The vapour of chloroform may be mixed with the carbonic acid.

The *general nutrition* of the patient demands careful attention. The digestive organs are frequently in a very disordered state, the patient having little or no appetite, and the bowels being extremely constipated. The first and most important part of the treatment consists in feeding the patient frequently and with easily digested food. And we can only find by experience what is best. Milk is often a valuable article of diet in such cases; wine or other alcoholic beverages are generally required. For the relief of sickness and thirst, ice placed in the mouth frequently is most beneficial. The bowels require careful attention; small doses of castor oil, frequently given, are the best means of inducing regularity in this respect, but occasionally copious enemata are often necessary to unload the distended rectum. Two or three drachms of Rochelle salt, with a little tincture of senna, form a useful occasional aperient draught. The act of defæcation is often exceedingly painful, and patients postpone it as long as possible; the evil may proceed to a very extreme extent if the patient be not watched.

The state of the urinary organs frequently calls for relief. In those distressing cases where towards the end of the disease fistulæ

form between the vagina and the bladder, or between the uterus and rectum, or vagina and rectum, but little can be done except to observe great cleanliness. For the relief of the irritability of bladder often present, Dr. West thinks highly of the use of Vichy water. Uva ursi or pareira, with a little liquor potassæ, are medicines of established utility in such cases. The triticum repens, highly recommended by Sir Henry Thompson in the treatment of cases of irritable bladder in the male sex, will be found useful.

The question as to the propriety of giving, to the patient herself, expression of our opinion as to the prognosis in a case of uterine cancer, is a matter of great delicacy and importance. Knowing as we do that in well-marked cases there is literally no hope of saving life beyond a limited time, it is yet occasionally difficult and even improper to say so to the patient. There are few individuals possessed of sufficient fortitude to be told, at once, that they must necessarily die; and it is very certain that, in many cases, to deprive the patient of all hope is to still further shorten her brief existence. It is wrong to positively assure a woman with cancer of the uterus that she will recover, but it is assuredly not the best thing to summarily dispose of her life by a strong expression to that effect. These remarks apply of course only to cases where cancer is well marked. It is hardly necessary to urge the importance of abstaining from giving, *in any degree*, an unfavourable prognosis in cases where the diagnosis of cancer is not very well established. Experience has shown that the best observers have been deceived in their prognosis, the case not always turning out so unfavourably as they had expected. It is easy to decide too soon; by waiting a little doubts are gradually dispelled.

The question of the treatment of *cancer of the vagina* and *cancer of the bladder* requires no extended notice. The treatment required in cases of cancer of the vagina is identical with that of cancer of the uterus, the symptoms being essentially the same. Little benefit can be expected from surgical treatment. In *cancer of the bladder*, generally secondary to cancer of the uterus or vagina, the treatment, beyond what is necessary in all cases of cancer, consists in relieving the patient as much as possible from the sufferings attendant on the irritable condition of the bladder usually present, and in providing means for remedying, as far as possible, the inconvenience arising from fistulous openings in the vesico-vaginal septum. Occasionally it has been found necessary to perforate the bladder when the orifice is occluded by cancerous growths.

CHAPTER XXV.

TUBERCLE OF THE UTERUS; DISTENSION OF THE UTERUS BY FLUID (HYDROMETRA AND HÆMATOMETRA) OR BY GAS (PHYSOMETRA).

Tubercle of the Uterus.—Pathology and Treatment.
Distension of the Uterus with Fluid (Hydrometra and Hæmatometra).—Pathology and Treatment.
Distension of the Uterus with Gas (Physometra).

TUBERCLE OF THE UTERUS.

This is an exceedingly rare disease. When tubercle is found in the uterus, it is generally present in other organs. There appears to be a particular and unusual tendency to the formation of tubercle in the uterus after parturition, and during the time the uterus is undergoing that reduction in bulk and change of texture peculiar to this period.

The part of the uterus which is usually the seat of tubercle is the inner surface—when occurring after child-birth, at the seat of the placental insertion—and from the mucous lining it spreads into the thickness of the uterine wall. The final effect may be a considerable increase in the bulk of the uterus. The tubercular matter appears in the form of small greyish or greyish-yellow granulations; the mucous lining is also much thickened and looser in texture than usual. There is a discharge from the uterus of a dirty yellow or brown colour. The disease does not appear to be attended with much pain.

Rokitansky relates an important case where acute tuberculosis of the uterus set in in a patient æt. 34, immediately after delivery of an eight months' fœtus,* death occurring at the end of nineteen days. H. Cooper† also details an interesting case in which rupture of the uterus occurred in the third month of pregnancy, due to

* *Allg. Wien. Zeit.* 1860, No. 21. † *Un. Méd.* 1859, No. 54.

considerable tuberculosis of the uterus. Mr. Tomlinson * relates a case of tuberculosis of the uterus of three years' duration, the patient æt. 55, and the uterus considerably enlarged.

TREATMENT.

Tubercle of the uterus would be treated, in cases where it is detected, on general principles. Careful and good feeding should form an important part of the treatment. Young women recently delivered, and of a phthisical tendency, should be carefully looked after, and great care taken to restore any lost power by suitable diet and regimen. Of the local treatment we can scarcely speak, experience being wanting, but the injection of weak solutions of iodine or bromine into the uterine cavity would probably constitute the best application. It would be requisite to have the os well dilated prior to such a procedure.

DISTENSION OF THE UTERUS WITH FLUID (HYDROMETRA AND HÆMATOMETRA).

Apart from pregnancy, an essential part of which is the presence of a considerable quantity of fluid—the liquor amnii—in the uterus, we have cases in which the organ is found to contain fluids in considerable amount. The old terms *hydrometra* and *hæmatometra* implied presence respectively of watery fluid and blood in the uterine cavity.

Accumulations of fluids in the uterus not unfrequently occur in association with closure of the outlet, narrowing and stricture of the cervix, agglutination of the os uteri, flexion of the uterus, presence of a tumour in the cervix or lower part of the uterus, the most common of these causes being chronic flexion of the uterus (see 'Flexions'). The quantity of fluid so accumulated in the uterus may be considerable, but ordinarily it is not very great. The due appreciation of these cases is a matter of much practical importance. An offensive persistent leucorrhœa is not uncommonly one of the results of these accumulations of fluid in the uterus.

The most considerable instance of hæmatometra is that met with sometimes in young women soon after the arrival of puberty, and due to retention of menstrual fluid in the uterus, the hymen being imperforate, or the os uteri itself congenitally occluded.

* *Obst. Trans.* vol. v.

Here the uterus may attain such a size as to reach to the umbilicus; the Fallopian tubes are not seldom also distended, and one occasional result is passage of some of the blood into the peritoneal cavity; a more rare event is rupture of the uterus itself into the peritoneum or into the bladder or rectum. Bernutz and Goupil * have devoted much attention to the study of the accidents arising out of these and other effects of menstrual retention.

It is remarkable that the uterus tolerates the presence of a fluid in its interior very differently in different persons. More explainable is the fact that, when the distension is not considerable, it excites more pain and irritation than when the organ is very greatly distended; the presence of a small quantity of blood may in cases of dysmenorrhœa give rise to great pain, the uterus acting vigorously in seeking to expel it. When, however, the distension is very great, it is usually accompanied by such a degree of thinning of the walls of the uterus, that the organ has little power of contraction left.

As an instance of distension of the uterus from menstrual retention, the following interesting case, recorded by Prall, of Hamburg, may here be quoted. The patient, æt. 43, previously regular, ceased to be so, and simultaneously symptoms of pregnancy set in. At the end of three months the uterus was enlarged, the os occluded, and the uterus contained a quantity of bloody fluid. It was imagined that the case was one of pregnancy with retroversion of the uterus; attempts were made to reduce this, but the force used had the effect at once of relieving the patient and showing the nature of the condition present. The pressure employed forced the blood through the occluded os uteri. †

Amputation of the cervix uteri has been followed by hæmatometra. Considerable distension of the uterus with serous fluid is met with chiefly in women advanced in years. An instance of this kind was recorded by Dr. A. T. Thomson, in which the uterus contained eight quarts of a dark-coloured brown fluid. ‡

TREATMENT.

The great object is to evacuate the contents of the uterus. This is not always easily done. When the lips of the os uteri are agglutinated, a careful examination is required to find out the

* *Clinique Méd. sur les Maladies des Femmes*, English translation by Dr. Meadows. (New Syd. Soc.)

† Schmidt's *Jahrb.* vol. cxvi. p. 65.

‡ *Med.-Chir. Trans.*

precise situation at which to make a puncture. In such instances the cervical cavity is more or less obliterated, so that the uterine cavity is soon reached. When there is stricture higher up in the cervical cavity, dilatation by means of tents, aided by slight incisions, may be advantageously had recourse to. When the case is one of retroflexion, the restoration of the organ to its normal shape, by pressure on the fundus from below, or by use of the sound, usually suffices to allow the fluid to escape. When the case is one of anteflexion, a suitable mechanical treatment must be adopted (see 'Flexions').

After evacuation of the fluid, pressure and administration of ergot should be employed to aid the uterus in contracting.

Further remarks on the management of cases of occlusion of the os or cervix uteri will be found in the chapter on 'Dysmenorrhœa.'

DISTENSION OF THE UTERUS WITH GAS.

Well-authenticated cases of this affection are not many in number, but there can be no question that gaseous accumulations do occasionally take place in the interior of the uterus. The most common condition under which such accumulation has been noticed, is the presence within the uterus of a dead fœtus, or portions of the membranes which have been abnormally retained in the uterus after labours or miscarriages. The gas formed in the uterus under these circumstances is the result of the decomposition of the retained matters, it is fœtid, and the uterus at the same time may contain purulent detritus. Further, it appears necessary that, to produce this gaseous distension of the uterus, the orifice of the organ should, having been recently open, have become closed. It seems on the whole probable that, first, air must have obtained admission into the uterus; that, secondly, the os must have become plugged up or closed; and that decomposition must have then occurred, and thus given rise to the gaseous distension now alluded to. That air does frequently pass into the uterus immediately after the expulsion of the fœtus is a fact. It is evident, further, that irrespective of labour or miscarriage, coagula undergoing decomposition in the uterus may generate gas, which may be retained and accumulate in the uterus, though the number of cases coming under this head are very few compared with those previously described. It has been supposed by some that the lining membrane of the uterus may secrete gas, but there

is no proof of this. In many of the cases recorded as cases of gaseous accumulation in the uterus, the only proof of such accumulation has been the passage of flatus from the vagina, which has been erroneously supposed to come from the uterus. In an interesting communication to the Obstetrical Society of London, Dr. Harley* related the particulars of a case where flatus was occasionally expelled from the vagina. He ascertained by experiment that the gas so expelled had been the moment before drawn into the vagina, as he believed, by a spasmodic alternate contraction and relaxation of the recti abdominis muscles. Dr. Gooch mentions a case in which the patient only expelled flatus while not pregnant, the expulsion ceasing when she became impregnated, and he cited this to prove that the flatus must have come from the uterus. This fact, however, affords no absolute proof of the truth of the explanation for which Dr. Gooch contends. It was more probably a case, such as that observed by Dr. Harley, of alternate admission and expulsion of air from the vagina.†

TREATMENT.

The obvious cure for this condition would be the evacuation of the gas by means of a long gum elastic or other rigid tube, which would have to be introduced carefully through the cervix uteri. A tight bandage and cold affusions externally would be useful subsequently.

* *Obst. Trans.* vol. iv.

† See also a paper on this subject by Dr. Rasch, *Obst. Trans.* vol. xii., 281.

CHAPTER XXVI.

DISEASES OF THE FALLOPIAN TUBES.

Tumours of the Fallopian Tubes, Fibroid, Tuberculous—Cyst Formations—Distension of the Tube with Fluid—Distension of the Tube with Blood—Puriform Accumulations in the Tubes—Fallopian Pregnancy—Treatment.

The diseases of the Fallopian tubes do not very frequently present themselves before us during life, although various alterations are often observed after death in reference to the shape, position, permeability, &c., of these ducts. The following comprise the more important of these abnormal conditions.

TUMOURS OF THE FALLOPIAN TUBES.

Fibroid Growths may be found in such a position as to block up the passage, and occlusion of the tube sometimes thus results. *Tubercle* of the tubes has been met with, so also *cancer*. *Cyst formations* are more doubtful: they might readily be confounded with distension of the tubes themselves.

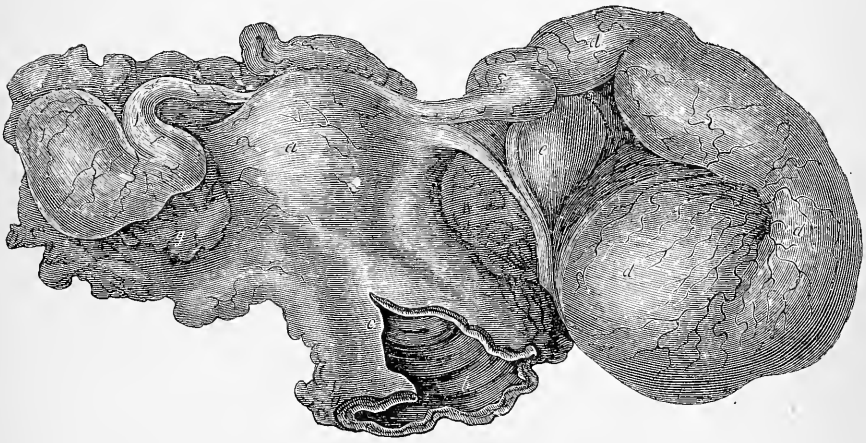
DISTENSION OF THE TUBE WITH FLUID (FALLOPIAN DROPSY).

Tumours constituted by distension of one or both tubes with fluid are not so very uncommon. They are met with chiefly in old people, and are accompanied with closure of one or both extremities of the tube. The quantity of fluid may be so great as to distend the tube to the size of the fœtal head or even larger (see fig. 115 from Hooper). The fluid itself is usually of a watery character mingled with flaky substances of varying consistence. It is a curious circumstance that both tubes have been found simultaneously and about equally affected. One point of interest in connection with the subject is the physical resemblance between such tumours and cystic tumours of the ovary.

BLOOD ACCUMULATIONS IN THE FALLOPIAN TUBES.

There are reasons for the belief that the Fallopian tubes are not very unfrequently distended with blood to a slight extent in women during menstrual life. In some such cases the blood so accumulated finds its way into the peritoneal cavity (see 'Peri-uterine Hæmatocele'). The blood may have three sources, viz. the uterus itself, the lining of the tube, or the Graafian follicle. It may be produced by imperforate hymen, or by imperforate os uteri, and may occur in all cases when the outlet of the uterus below is occluded in any way. Thus it may be associated with menstrual retention; the blood secreted in the uterus, or in the tube

Fig. 115.*



itself, or possibly blood arising from the ovary, distending the tube in common with the uterus. In a case of menstrual retention with distension of the uterus, the presence of a tumour in the pelvis by the side of the uterus, and having the shape of the enlarged Fallopian tube, would suggest the presence of distension of the tube with blood. But the Fallopian tube may be distended with blood in cases where there is no distension of the uterus of a like character. A fibroid tumour situated at the junction of the tube and the uterus, and blocking up the canal, was the cause of the distension in a case related by Favel, and quoted by Bernutz and Goupil.† Occlusion of the tube at this situation from other causes may doubtless produce the same result. Dr. Farre states

* Fig. 115 (after Hooper), Fallopian dropsy.

† *Op. cit.* tom. i p. 168.

that he has found accumulations of blood in tubes closed at both ends, and in cases where death has occurred during a menstrual period; conclusively showing, according to his opinion, that the menstrual fluid is supplied in part by the wall of the Fallopian tube.*

PURIFORM ACCUMULATIONS IN THE FALLOPIAN TUBES.

These are the result of inflammatory action in the tubes or the uterus; the period of childbed is the one during which such formations are most liable to occur, but they may follow inflammation of the uterus, or result from operations on the generative organs; they may occur idiopathically, and in connection with chronic inflammation of the interior of the uterus; they may also result from stricture of the os uteri, whereby escape of fluid formed in the uterus is prevented. In the puerperal class of cases, pus may collect in, and distend, the Fallopian tubes, and may finally regurgitate into the peritoneal cavity. This is one of the modes of origin of puerperal peritonitis.†

FALLOPIAN PREGNANCY.

This is to be considered a disease—and generally a fatal one. But the subject is one which falls out of our province. Rupture of the tube and fatal abdominal hæmorrhage are the usual results.

TREATMENT OF DISEASES OF THE FALLOPIAN TUBES.

There is very little to be said on the treatment of disease of the Fallopian tubes; they are inaccessible, safely, for surgical procedures. In some cases serous collections within them have been evacuated by means of a fine trochar and canula through the vagina.

In cases where the tubes are distended with pus, as in a case of puerperal metritis, great care would be required to maintain rest, lest the contents of the tube be poured out into the abdominal cavity.

In cases of *Fallopian pregnancy*, if it were possible to make an exact diagnosis of these cases of rupture and hæmorrhage during life, it would undoubtedly be better to open the abdomen and endeavour to secure the bleeding vessels than to allow the patient to die from hæmorrhage. No operation of the kind has ever been

* *Op. cit.* p. 618.

† See an interesting paper on this subject by Dr. Barnes, *Obstet. Trans.* vol. iii. p. 419.

attempted, but the subject has formed matter of discussion on more than one occasion at meetings of the Obstetrical Society of London. The chief difficulty lies in the diagnosis, for, until the patient is dead, the real nature of the case is not generally detected; such, at least, has been the experience of most practitioners. Increased accuracy of diagnosis of the diseases of the female generative organs may, perhaps, result in the more frequent recognition of this formidable accident sufficiently early for measures to be devised and carried out by which life may be saved.

CHAPTER XXVII.

DISEASES OF THE OVARIES AND BROAD LIGAMENTS.

Table of Cases of Diseases of the Ovaries.

Inflammation.—Acute Inflammation and Abscess of the Ovary—Chronic Inflammation, Ovarian Folliculitis, and Pelvi-peritonitis—Treatment.

Cystic Affections of the Ovary and Broad Ligaments.—Hydatid Cysts—Cysts of the Broad Ligaments (Wolffian Cysts).—Ovarian Cysts Proper.—General Characters—Origin—Varieties of Arrangement: Simple, Secondary, Tertiary, Multiple, Composite—Cysto-sarcoma, Alveolar, Adenoid, or Glandular Tumour—Cysto-carcinoma, Dermoid—Shape and Consistence of Cysts—Their Lining and Contents—Dermoid Cysts: Nature and Structure—Compound and Composite Ovarian Tumours: Structure and Contents—Solid Tumours of the Ovary enumerated—Natural History of Ovarian Tumours and Ovarian Dropsy as Data for Prognosis and Treatment—Mode in which Life is destroyed—Complications with Pregnancy—Special Consideration of the Prognosis of Ovarian Dropsy—Examination of Dr. Robert Lee's and Mr. Safford Lee's Cases.

TABLE OF CASES OF DISEASES OF THE OVARIES.

The following is a brief account of cases of diseases of the ovaries, or at all events diagnosticated as such, at University College Hospital, and referred to in the table of cases given in Chapter I.

The first series include cases of inflammation, &c., of the ovaries; the second include tumours of the ovaries. The whole of my experience is not here represented, the cases here referred to being only those observed at the hospital from 1865 to 1869. In Chapter XXIX. will be found another table of cases in which I have performed ovariotomy in public and private practice.

Cases of Inflammation, etc., of Ovaries.

(*University College Hospital*, 1865–1869.)

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
22	Mrs. S.			Pains in ovarian region.
26	A. F.	M.	0	2 miscarriages. A flattened tumour behind uterus, probably inflamed ovary.
27	A. H.	M.	1	Gonorrhœal ovaritis.
26	S. W.	M.	1	Left ovary displaced, behind uterus.
30	N.	M.	7	Ovaritis (?).
44	J. W.	M.	4	Tenderness in region of left ovary.
45	Mrs. H.	M.	9	Severe abdominal pain. (?) ovaritis.
46	Mrs. R.			Pain right ovarian region.
49	M. S.	M.	1	Chronic ovaritis.
50	A. F.	M.	1	Probably ovaritis of gonorrhœal origin.

Cases of Tumour of Ovaries.

(*University College Hospital*, 1865–1869.)

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
26	H. B.	M.	1	In-patient. Ovarian cystic tumour. Paracentesis. Death.
29	H. B.	M.	3	Small round tumour, size of orange, felt *per vaginam*. Probably cyst of ovary. Out-patient.
29	M. A. B.	M.	0	Tumour size small orange, in position of right ovary. Out-patient.
32	Mrs. D.	M.	2	Combination of ovarian cystic tumour with pregnancy. (Subsequently delivered at full term by Dr. Murray 1869.) Death 2 days after. (See case in *Obst. Transact.*) Out-patient.
34	A. I.	M.	2	Ovarian cystic disease, for which tapped. Also hypertrophic elongation of cervix uteri and prolapsus uteri. In-patient.
38	J. T.	M.		Ovarian cystic-colloid. Ovariotomy performed in Hospital.*
41	Mrs. O.			Ovarian cystic disease. In-patient.
56	M. W.	S.		Large unilocular cyst. In-patient. Ovariotomy performed out of Hospital. Recovery.
59	A. C.	M.		Ovarian cystic disease. Ovariotomy performed in Hospital. Death.

ACUTE INFLAMMATION AND ABSCESS OF THE OVARY.

This is a condition rarely met with in practice. Sudden suppression of the menses, from chilled or wetted feet, has appeared to lead to it, but such an occurrence is extremely rare. In connection with the puerperal state it is more common; we then generally find it associated with a pyæmic condition, with inflammation of the uterus, and marked changes in the large uterine veins. Pelvic abscess, which may follow on parturition, or on any operative procedure on the generative organs, generally begins in the neighbourhood of the ovary, and may involve this organ. Acute inflammation and abscess of a previously healthy ovary is a condition hardly known. But when the ovary is affected with cystic disease the cysts may inflame and suppurate.

CHRONIC INFLAMMATION OF THE OVARY.

Chronic inflammation of the ovary is a very interesting and important condition. Every derangement of the process of ovulation is probably attended with some pathological change, which,

* For further account of this and other cases of Ovariotomy see Chapter XXIX.

however, we have no opportunity usually of actually observing; such morbid condition must be classed under the above heading. The surface of the ovary is the part where this morbid change is mostly seated; thus chronic inflammation of the surface of the ovary may produce derangement of ovulation, or *vice versâ*. Bernutz and Goupil deserve credit for attracting attention to the frequent occurrence of what they term 'pelvi-peritonitis,' meaning thereby inflammatory action in the peritoneum covering the ovary,* and in the immediate neighbourhood; the relation of this pelvi-peritonitis to chronic inflammation of the ovary is apparent enough. [The recent researches of Waldeyer show that the surface of the ovary itself usually described as the peritoneal surface has really no continuation of the peritoneal membrane over it.] Whether it more frequently happens that the inflammatory action pervades the whole ovary, or the surface of it, is not certain, but it is reasonable to expect that it should be most apparent where most change is going on, viz., on the surface. Various considerations thus lead to the conclusion that ovarian folliculitis and ovarian peritonitis, one or both, may be of frequent occurrence. †

Chronic inflammation of the ovary, in the sense here understood, does not necessarily leave behind it permanent alterations. The changes occurring during normal ovulation are rapid; the nutrition-changes are quick in their occurrence; and the thickenings and turgescence accompanying these changes, *when irregular* in their character, probably disappear in a proportionately quick time. Hence at the end of sexual life, ovaries which have been the seat of ovaritis for many years may present nothing remarkable.

The pathological changes attending chronic ovaritis are—increased vascularity of the follicles about to be ruptured, undue thickening of the peritoneum covering them, and formation of false membranes on the peritoneum in the immediate neighbourhood. To these must be added slight effusions of blood on the surface of the ovary. Indeed it is very probable that the so-called pelvi-peritonitis is frequently nothing more than inflammatory action consequent on slight quantities of blood escaping from the

* See also Dr. Tilt *On Uterine and Ovarian Inflammation.*

† Negrier applies the term 'vesiculitis' to the morbid changes observed in the follicles or vesicles. In his work (*Recueil des Faits pour servir à l'histoire des Ovaires et des Affections Hystériques de la Femme*, Angers, 1858) will be found some interesting cases illustrative of this subject.

Graafian follicle at the moment of rupture or subsequently. When the nutritive changes of the body generally are not proceeding regularly, ovulation is frequently disturbed, and inflammatory changes probably accompany or form a part of such disorder. It is not rare to meet with abnormal adhesions in the region of the ovary, the result of such inflammatory mischief. Pleuritis and ovaritis occurring in a tubercular subject thus resemble each other in regard to their results.

Pain in the region of the ovaries is very common, and has been very generally supposed to indicate the existence of diseased processes in the ovary itself. I have until within a comparatively recent period shared in this impression, but I do so no longer. I have in another place given reasons for attributing in many cases the pain referred to the region of the ovaries to other causes altogether, and in point of fact I entertain no doubt that the pain frequently felt above Poupart's ligament is due far more often to anteflexion of the uterus than to a diseased condition of the ovary. (See p. 375.) But, on the other hand, such pain *may* be and doubtless now and then *is* due to a morbid action in the ovary itself. This pain is indicative in some cases of ovarian folliculitis and local peritonitis associated and related as above described. Recently* Dr. Priestley has called attention to cases of what he terms 'intermediate' dysmenorrhœa, viz., cases where regularly, but at non-menstrual periods, the patient experiences a severe pain in the ovarian region, indicative, as he considers, of a difficulty in the process of ovulation, a difficulty consisting in undue resistance to the advance of the Graafian follicle to the surface of the ovary. In these unusual cases the ovulation occurs probably a little out of the ordinary course, or more correctly speaking, the preliminary part of the growth of the Graafian follicle gives rise to pain not generally present. Dr. Priestley's explanation appears to be correct and in accordance with our physiological knowledge of the subject.

A very curious circumstance is the fact that in the cases where pain (associated mostly with anteflexion of the uterus as I believe) in the region above Poupart's ligament is present, the abdomen is liable to swell and present considerable tumefaction in this position. I am unable to explain the circumstance satisfactorily, but I have noticed it again and again, and in a great many cases this tumefaction is the symptom of which the patient complains

* Paper read at Roy. Med. Chir. Soc.

most. I have sometimes thought it probable that the anteflexion gives rise to a traction on the broad ligament and thus on the ovary itself, and that after all, although the anteflexion is the primary evil, seeing that the pain and tumefaction disappear on its removal, the ovary may be really irritated in these cases. It is known that local peritonitis in the region of, and involving the ovary will give rise to similar symptoms, tenderness on pressure, tumefaction, swelling, &c. The mechanical stretching of the peritoneum adjacent to the ovary seems to me to be the causal element of this particular symptom when associated with anteflexion. At least this is the best explanation I can offer of the facts which I have witnessed.

Sexual excesses may occasion pain in the ovarian region. Thus, a lady, æt. 20, had been married nearly a year, the ovaries were the seat of great pain, walking was almost impossible, from the pain attendant thereon, the abdomen was swollen, no pregnancy. Sexual excess was the cause, and pregnancy quickly followed attention to the advice tendered. Local peritonitis in the region of the ovary produces precisely the same symptoms. Another symptom is sickness or nausea; a blow on the testicle may occasion sickness, and undue congestion of the ovary may give rise to the same symptoms.

The causes of chronic ovarian folliculitis and peritonitis are frequently functional, as in the instances just mentioned. Unnatural exercise of the generative organs gives rise to it probably more frequently than excesses of a more regular kind. With reference to this somewhat difficult question, it must be remarked that exalted functional activity of the ovary itself is sometimes the cause of the evils here alluded to. This exalted functional activity may be induced by defective moral training, or early addiction to bad habits. The ovaries, like other organs of the body, fall by inordinate use into a state which closely borders on disease.

Diseases of the uterus react on the ovaries, sometimes in a very direct manner, as when there is obstruction of the outlet from the ovary through the uterus. Blood requiring to pass from the Graafian follicle into the uterus will then be effused elsewhere. Chronic congestion of the uterus also is probably accompanied by some degree of ovaritis.

The effects of chronic ovaritis are general enlargement of the organ, greater size of the Graafian follicles, thickening of their coats. The most marked symptoms are, pain in the ovarian

region, pain on standing, pain on defæcation and during intercourse. Not infrequently on digital examination the ovary is felt enlarged, exceedingly tender to the touch. It is not common for the ovary to attain any considerable size as the result of inflammation alone. When chronic ovaritis has existed over a long period, the surface of the ovary may be found adherent abnormally to the adjacent structures. In some such cases sterility is a necessary result. The cystic affections of the ovary will be considered further on, but it is probable that some of them originate in chronic ovaritis.

TREATMENT OF INFLAMMATION OF THE OVARY.

In cases of *acute* inflammation of the ovary, entire rest is essential. Leeches should be used in cases where the attack depends on a sudden chill, followed by warm and moist applications. In cases where gonorrhœal infection is believed to be the source of the mischief, leeches might still be useful at first, specific remedies being given later. When a puerperal cause is present, depletion is not indicated; the case is one of, or tending towards, pyæmia, and the indication is to support the strength of the patient rather than to remove blood. Rest, warmth by means of hot turpentine stupes, and a stimulating and nourishing diet, would be advantageously had recourse to.

Cases of *chronic ovaritis* must be treated with a view to the special requirements of the patient. In some cases immoderate sexual excitement has to be checked, and a moral treatment enforced. The tendency to congestion of the ovaries may be diminished also under these circumstances by employment of cold affusions over the hips and lower part of the abdomen, by remedies and a regimen calculated to call the other functions of the body into active exercise. If there be no tendency to uterine displacement or flexion, the gymnasium, or equestrian exercise, or some active mental employment, necessitating also a tolerable amount of walking, may be recommended. Exercise is, under these circumstances, almost always attended with some degree of pain, and it is frequently necessary to keep the patient at rest for a time, before commencing exercise to any great extent.

Functional rest is required in all cases more or less. At the menstrual periods the patient should be ordered to remain on the couch or in bed, the apartment kept cool, and stimulating nourishment avoided.

Counter-irritation and sedatives constitute on the whole the best treatment for the ordinary run of cases. The tartar emetic ointment, or a liniment containing croton oil, may be rubbed in night and morning over the ovarian regions, and opiates sufficiently strong to relieve pain ordered. One pill containing half a grain of opium, a third of a grain of extract of Indian hemp, and one grain of camphor, may be given night and morning (see 'Treatment of Chronic Inflammation of the Uterus'). Care should be taken that the bowels are relieved each day.

CYSTIC AFFECTIONS OF THE OVARIES AND BROAD LIGAMENTS.

These are of great interest and importance. They are frequently most serious in their results, their diagnosis is often a matter of great difficulty, and it is only within a quite recent period that medical science has been able to grapple with them in any degree satisfactorily. For clinical reasons the cyst affections of the ovaries and of the broad ligaments will be considered side by side, but they are of course essentially different both in nature and origin.

We have to consider *seriatim*—

Hydatid cysts.

Cysts of the broad ligament, sometimes termed Wolffian cysts.

Proper ovarian cysts, of which there are several varieties, including the cysts met with in what is termed 'ovarian dropsy,' 'dermoid cysts,' &c.

Hydatid Cysts

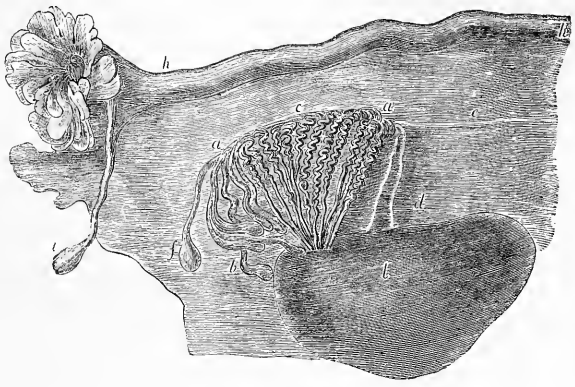
are sometimes met with on the outer surface of the ovary, or attached to the peritoneum in the neighbourhood. The size of such cysts does not ever probably much exceed that of a large orange. They have the ordinary character of hydatid cysts, such as are found in other localities. They—probably almost constantly—originate in the liver, escaping from an hydatid tumour of the liver containing them, into the peritoneal cavity.

Cysts of the Broad Ligament (Wolffian Cysts).

The formation of large cysts on the surface of the broad ligament, and quite unconnected with the ovary, is well substantiated. These cysts are usually single and quite simple. They originate in the little tubules or terminal cyst-like bodies (see *f b i* in fig. 116 from Kobelt) found near the fimbriæ of the Fallopian tubes

and close to the ovary. The structures in which they originate are the remains of the tubules of the Wolffian body. The cysts of the broad ligaments rarely attain a size exceeding that of an orange, their course is ordinarily very slow, and the inconvenience they occasion is consequently not great. Now and then, however,

Fig. 116.*



they attain a large size. Thus Mr. Spencer Wells† mentions a case in which the cyst was twice the size of the adult head. It was removed from a patient æt. 20. Dr. Wynn Williams exhibited at the Obstetrical Society‡ a very large single cyst, partly removed during life from the abdomen, which was referred to me for examination. It was a single large simple cyst 24 inches in circumference, and the conclusion arrived at was, that it had originated in the broad ligament. The walls of the cyst were $\frac{3}{16}$ of an inch thick, it had undergone inflammatory changes within, and consequent thickening, and had become adherent superiorly to the diaphragm. The abdomen had been enlarged in this latter case for several years. I have myself successfully removed by the operation for ovariotomy a cyst as large as this last, and it appeared to be of similar character. The patient had had children, and her age was over 50. The duration of the tumour was in this case over four years. More recently I removed along with a large true ovarian tumour two such cysts, one the size of a large walnut.

* Fig. 116 (from Kobelt) represents the parovarium with its terminal cysts.

† *On Diseases of the Ovaries*, vol. i. p. 239.

‡ See *Obstetrical Transactions*, vol. viii. for 1866.

The *age* at which they occur with the greatest frequency is between 20 and 40. But one variety of them, the dermoid cysts, may be observed much earlier than this.

OVARIAN CYSTS (PROPER).

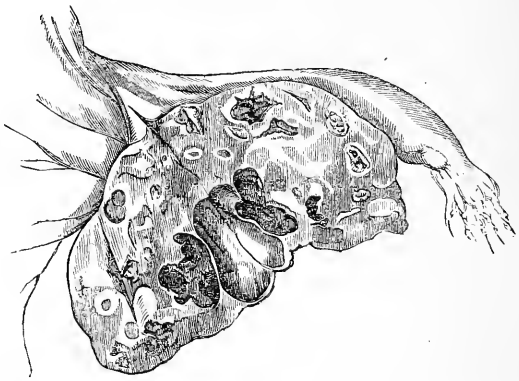
Ovarian cysts occur of all sizes, from one of microscopic minuteness to one of sufficient size to distend the abdomen to the utmost.

One ovary alone may be diseased; sometimes both are affected.

They occur sometimes singly; in most cases, however, when the ovary takes on cystic disease, more than one, generally many, cystic growths are found associated.

They contain fluid, or a semi-fluid or jelly-like material, or together with this a growth more or less firm and solid. They

FIG. 117.*



may undergo, like other structures, inflammatory changes, resulting in formation of pus, false membranes, &c.

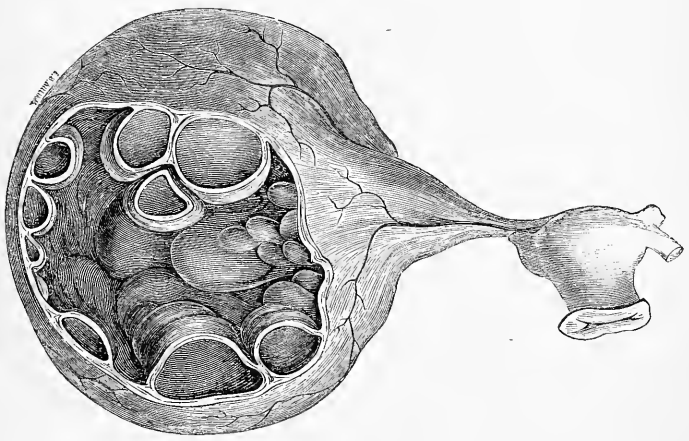
In many cases ovarian cysts are evidently nothing more than enlarged and hypertrophied and dropsical Graafian follicles, such as represented in fig. 117.

Rokitansky and some subsequent observers have even succeeded in finding ova in some of the cysts in question, thus affording a demonstrative proof of their nature. The follicle does not for some reason or other burst, or if bursting occurs its lining takes on certain morbid changes subsequently, the result being continued growth of the cyst, and filling of its cavity with fluid. Simple

* Fig. 117. Section of an ovary, showing enlarged Graafian follicles with serosanguineous contents. (Half the actual size.)

ovarian cysts and multiple cysts originate in this way according as one or more follicles take on morbid action. We can imagine this hypertrophy affecting the Graafian follicles at any period of their growth, with proportionate differences in the results. The Graafian theory of the origin of ovarian cystic disease being admitted, it is easy to see how all sorts and varieties may present themselves in the relations of cysts. A cyst grows, and in its growth carries over it, or within it, portions of the ovarian stroma, in which lie the elements of future Graafian follicles. These

Fig. 118.



undergo the pathological cystic transformation, and hence we get cysts developed one within the other almost *ad infinitum*.

The variations in the growth of the cysts occasion also great differences in the aspect and relations of the tumour at different periods. Thus, a 'simple' cyst may preserve its integrity for many years, the remainder of the ovary not partaking, or partaking reluctantly, so to speak, in the cystic transformation; or the primary cysts may be rapidly encroached upon, and filled up with secondary growths of cysts. And what may happen in reference to the first and second growths may take place also between the secondary and tertiary cysts.

The principal *varieties of arrangement* are as follows:—

A. One large cyst (simple).

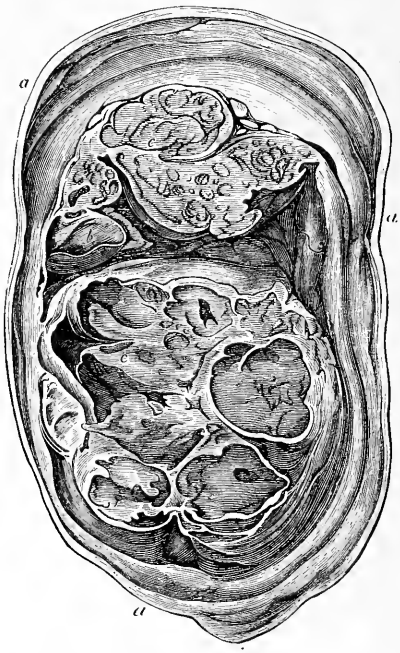
B. One large cyst in the interior of which are found several smaller ones ('secondary'), and within these again others still

smaller ('tertiary'); these are also termed 'compound' cystic tumours, 'proliferous' (see figs. 118, 119, from drawings by Dr. A. Farre).

C. Three or four large cysts ('multiple,' Farre) quite or nearly contemporary in growth, and which may contain secondary cysts.

D. A cystic tumour composed of one or more large cysts, and together with these a solid substance, itself containing cysts—

Fig. 119.



'composite ovarian tumours,' 'cysto-sarcoma,' or 'alveolar adenoid tumour' (Spencer Wells); 'glandular' (Wilson Fox). Fig. 120, from Cruveilhier, and designated by him and former pathologists 'colloid cancer,' represents an ovarian tumour of this kind.

E. Cancer may be present together with cystic structures ('cysto-carcinoma').

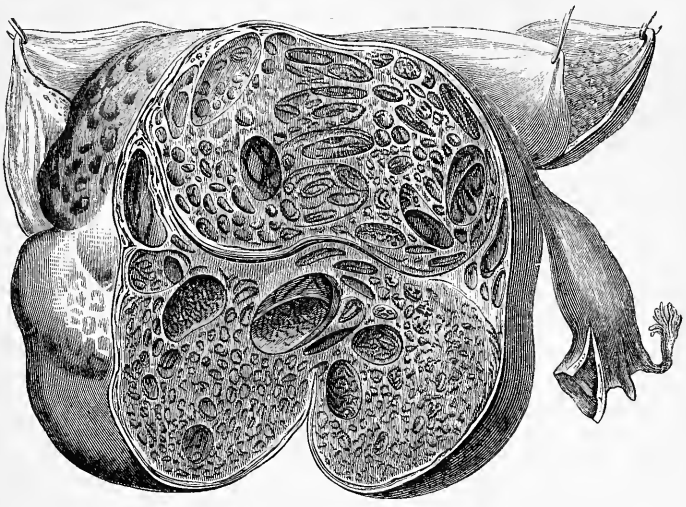
F. One or more cysts containing hair, fat, &c. ('dermoid').

In 'ovarian dropsy' we have one or more large cysts containing fluid.

The *shape* of ovarian cysts is ordinarily rounded where they

are single. Where also the tumour contains two or more large cysts, the outline of the whole tumour is rounded. When so large as to occupy the greater part of the abdomen, the shape of the

Fig. 120.*



cyst or cysts is determined necessarily by that of the abdominal walls.

The *consistence and thickness of the walls of the cysts* are

Fig. 121.†

various. The wall is sometimes very thin, especially in the case of single cysts, or where the tumour is mainly made up of one large

* Fig. 120, from Cruveilhier and Farre, is a good representation of the alveolar or glandular tumour; formerly termed colloid cancer.

† Fig. 121 represents epithelial cells from the interior of an ordinary ovarian cyst: A from a very small cyst; * the same, after addition of acetic acid; B from the surface of a contained cyst.

cyst: the free surface of most cysts is thin. But the cyst walls have often very considerable thickness, and they are liable to be thickened by deposit from within, this deposit being the result of inflammation or coagulation of effused blood, or deposition of fatty matter in the shape of cholesterine, or from presence of growths to be presently described. In the case of simple cysts, the walls are generally divisible into three layers. The outer is the peritoneal covering, which is thin and translucent. The middle coat is of varying thickness, according to the age of the cyst and other circumstances; it is generally a firm, fibrous layer, giving strength and consistence to the cyst. The middle coat contains the blood-vessels of the cyst, which are often very numerous, and may be as large as a small quill. Fatal hæmorrhage may occur in the operation of paracentesis, from wounding these vessels. The internal coat is a layer of cells, generally spheroidal, sometimes columnar (see fig. 121); the epithelium may be a simple layer, but is very often in several layers. The character of the internal lining varies in different places, and according as other changes—inflammatory, &c.—have affected it.

The *contents of ovarian cysts* are open to great variation. Some, containing hair, fat, teeth, &c., form a class by themselves, presently to be described (dermoid cysts). The contents of the more ordinary cysts are mostly fluid, but very frequently they have a consistence more nearly that of treacle, and we may have all gradations between a limpid fluid and a thick mucus-like mass. The colour varies excessively. In the majority of cases, the large cysts contain a fluid simply serous in character, light yellowish and transparent; where there are many cysts, it is not uncommon to find the contents of no two cysts precisely alike. Blood is, not very uncommonly, effused into the cavity of ovarian cysts, and the transformations through which the blood passes give rise to peculiar appearances, the contents then assuming various dark shades of colour. There may be flakes of fibrinous matter together with fluid, or the contents of the cyst may be distinctly puriform. In some cases there is an admixture of fattily degenerated structures. The consistence of the contents is peculiar. In almost all cases there is a remarkable viscidity, and the contents of ovarian cysts are sometimes so extremely tenacious that the whole mass when pulled out holds almost inseparably together. The chemical constitution of the fluids of ovarian cysts is as follows:—

Solid matters	.	.	58 per 1,000 (average of 31 analyses)		
Pure albumen	.	.	43 ,, 1,000	,, ,, 26	,,
Salts	.	.	7 ,, 1,000	,, ,, 15	,,

Fatty matters and fibrin in small quantities.

The foregoing figures embody the results of analyses made by Becquerel of the contents of ovarian cysts taken from ten individuals. The average only is stated above, but there was a very wide range in the proportions of the different constituents in different cases. Thus the figures representing the highest and lowest proportion of solid matters were 101 and 21; the highest and lowest for albumen 90 and 17; for salts 10 and 1½. These results are calculated from a table which will be found in Mr. Clay's translation of Kiwisch (p. 108), and which was supplied to Mr. Clay by Becquerel.

In an elaborate paper by Dr. Wilson Fox* will be found the most recent qualitative analyses of the contents of ovarian cysts. 'The results tend to show,' Dr. Fox believes, 'that in these fluids there is a considerable difference between the contents of the different cysts. In all, the reactions obtained are more akin to those modifications of albumen discovered by Professor Scherer, and termed by him metalbumin and paralbumin, than to any of the hitherto isolated members of the series.' The reaction was always alkaline, there was no precipitation with acetic acid, a point distinguishing these fluids from mucus.

An important fact here to be noted is, not only that the same cysts have not at all times like contents, but that the same cyst tapped at different periods may give issue to fluids of varying degrees of consistency.

DERMOID CYSTS OF THE OVARY, CONTAINING FAT, HAIR, TEETH, BONES, ETC.

These form a well-marked and distinct class, not in reference to their outward form, but to the nature of their contents. They are not very commonly met with. The term 'dermoid' has been applied to them from the nature of their contents, which are epidermic in character. They vary in size from a millet seed to that of several inches in diameter. Usually there is found in the cysts a lining composed of a substance like the cutis vera, in which may be traced structures identical with those of the true skin, viz. papillæ, sebaceous follicles, and hair bulbs, together with

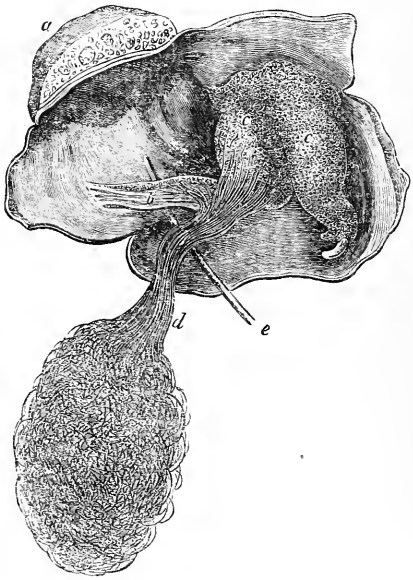
* *Med.-Chir. Trans.* vol. xlvii. p. 272.

sweat glands. Masses of fat intermixed with hair, the latter rolled up in balls, and teeth, with plates of bone—some or all of these form the contents of the cyst. But together with these products, which have given the name 'dermoid' to this variety of cysts, they frequently contain fluid, gelatinous material, and glandular growths such as are met with in other kinds of ovarian cysts. When the cyst has been the seat of inflammatory changes, pus may also be found within it.

They are found at all ages, in the child, in the woman, and after the period of sexual vigour is passed. Compared with other ovarian cysts they are rare; they seem to have been observed prior to puberty more frequently in proportion than other ovarian cystic tumours.

The precise nature of these curious growths has been a matter of controversy. It appears certain that they originate in the

Fig. 122.*



Graafian follicles. The presence of hair, teeth, and bones, was naturally suggestive of the idea that the cyst was a product of generation, until it was known that they are formed quite independently of sexual intercourse. By some they have been

* Fig. 122, from Cruveilhier, exhibits a dermoid cyst with its contents, consisting of hair, hair follicles, adipose tissue, &c.

considered as monstrosities by inclusion, a theory which fails also to account for the facts. The accurate account of the anatomy of these cysts put forward by Steinlin,* showing the presence of a skin-like structure in the cyst, explained why the cyst was found to contain skin secretions, viz. hair, sebaceous matter, and teeth. The late Dr. Ritchie, † a recent writer on the subject, expressed his belief that every dermoid cyst of the ovary is really an ovum which has undergone a certain amount of development; that it is a perverted attempt at parthenogenesis. The arguments which he adduced to give support to this view are, the presence of true bone in the cyst, the presence of true striated muscular fibre, the occasional presence of dermoid cysts in the uterus and in the Fallopian tube. Steinlin pointed out the dermic structure and the analogy with dermic cysts found elsewhere. This analogy Dr. Ritchie denies, and with apparently good reason. The point at issue, viz., whether the Graafian follicle itself or the ovum which it contains originates these dermoid cysts, is one of great physiological interest.

Dermoid cysts of the ovary run generally a slow course. They may inflame, suppurate, and ulcerate, and death may be the result of such alterations. In some cases the cysts have ruptured into the peritoneum, in some they have ulcerated into the bladder, with the result that the patient evacuates hair, &c., with the urine.

COMPOUND OR COMPOSITE OVARIAN TUMOURS.

The *partly solid, partly cystic* structures found in many ovarian tumours, and for which the appropriate designation is 'compound' or 'composite,' will next engage our attention.

Of late years the occurrence of a substance containing and surrounded by cysts, and having itself a great resemblance to mammary glandular tissue, has attracted attention. It was termed by former writers 'cystic sarcoma.' Mr. Spencer Wells‡ proposed to designate it 'adenoid tumour,' or 'adenoma' of the ovary. He described it as 'identical in structure with the adenoid growths first described in connection with the mammary gland,' and consisting of 'a delicate fibrous stroma, forming round or oval alveoli, the latter lined by densely grouped epithelial cells forming a zone

* *Zeitsch. f. nat. Med.* Band ix.

† *Ovarian Physiology and Pathology.* London, 1865, p. 175.

‡ Report of Pathological Society in *Med. Times and Gaz.* Oct. 1862. See also *On Diseases of the Ovaries*, vol. i. p. 122.

enclosing an area loosely packed with cellular elements of a similar form.'

Another variety of the partly solid and partly cystic tumours of the ovary is that hitherto known as 'alveolar' or 'pseudo-colloid' disease of the ovary. It was for some time considered to be carcinoma of the colloid variety, but this idea is now entirely abandoned. The surface of the section of such a tumour resembles, as Dr. Farre,* who has well described it, remarks, 'a fine sponge, the alveolar spaces being condensed and somewhat flattened, in consequence of the profusion with which the alveoli have been developed' (see fig. 120). 'These cysts are filled with a viscid mucus-like material, resembling half-liquid jelly.' The mass on section sometimes resembles a honeycomb. Respecting the nature of these adenomatous and alveolar growths more will be said presently.

Cystoid cancer constitutes another composite tumour. Here the more ordinary cysts are present, together with medullary cancer, the cancerous growths pervading the stroma of the ovary, and pervading, as is the manner of cancerous growths in other parts of the body, in succession, the adjacent structures. As is the case in the two preceding groups, the proportion of solid matter to cystic growth varies in different cases and at different periods in the same case. In cases of cystoid cancer the tumour —semi-solid, or nearly solid to the feel at one part, more or less fluid at another, presenting often rounded eminences on its surface —may grow with great rapidity, and the whole tumour may be of considerable size. The cysts are liable to contract close adhesions of a more vascular nature than usual to surrounding parts. In a case operated on by myself these adhesions when broken bled most profusely.

The nature of *adenomatous* or *glandular* and alveolar structures, and their relations to cystic and cystoid growths of the ovary, have undergone a most careful and complete investigation at the hands of Professor Wilson Fox, the results of whose researches are contained in a paper in the 'Medico-Chirurgical Transactions'† for the year 1864, and whose conclusions, demonstrative in themselves, have been verified by subsequent observers.‡

It appears necessary (following Dr. Fox) to go back to the

* *Loc. cit.* p. 592.

† 'On the Origin, Structure, and Mode of Development of the Cystic Tumours of the Ovary,' vol. xlvii. p. 227.

‡ Dr. Braxton Hicks, Mr. Hulke.

primary developments of the ovary, and of its contents, in order to arrive at an explanation of the structure of these cystic growths. Pflüger's * observations on the development of the ovary in the calf and the kitten show that the Graafian follicles begin in these animals as *tubes*, these tubes becoming constricted at various points, in order to form the separate follicles. Dr. Wilson Fox has found the human ovary in early embryonic life to contain tubules, or quasi-tubular structures intimately concerned in the production of the Graafian follicle. Now, Dr. Fox has made out that in many cystic growths of the ovary there is met with a structure of tubular character, wherein occur changes analogous to those observed by Pflüger in the development of the Graafian follicles of some other animals, viz. formation of tubes, or glands, and constriction of these tubes at certain points, one result of which is formation of cavities or cysts within this glandular tissue. It appears that Billroth, from observations in the thyroid gland, had come to the induction—'brilliant,' as Dr. Fox terms it—that similar tubular structures would be found in ovarian cystic tumours. Dr. Fox has furnished the experimental proof that this is the case. It is his belief that 'these tumours of the ovary (containing glandular structures) should be classed with those which originate in other glandular organs, by an abnormal repetition of the processes of development observed in the fœtal condition, recurring with aberration in the adult.'†

Dr. Fox's results are based on an examination of 15 cases of ovarian tumour, in 9 of which he was able to trace the formation of secondary cysts from tubular or glandular structure within cavities which appeared to have been Graafian follicles.

A brief abstract of Dr. Fox's account will now be given:—

The *lining* of the parent cysts presents usually a spheroidal epithelium in one or several layers. The growths which proceed from the internal walls Dr. Fox describes as 'papillary,' 'villous,' or 'glandular,' these terms indicating the physical characters of the growths.

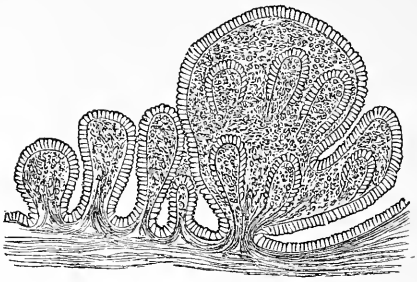
The papillary growths, as represented by Dr. Fox (see fig. 123), are composed of processes of delicate hyaline stroma, covered with epithelium, spheroidal or columnar, and tending to form large composite masses from repetition of the same process of growth from the sides of those already formed. The surface of the growths is finely villous, they are very vascular, and may attain considerable size.

* *Ueber die Eierstöcke der Säugethiere und des Menschen*, 1863.

† *Med.-Chir. Trans.* vol. xlvii. p. 275.

They are solid, but adjacent ones often grow together, and hence are formed between them narrow crypt-like spaces. Thus origi-

Fig. 123.



nate 'secondary' cysts, and *in the secondary cysts* further growths occur. Concurrently also, the original cyst necessarily increases in size, and secretions form in the interior. Dr. Fox considers that the formation of secondary cysts, as *thus* described, does not occur to a great extent.

The 'villous and glandular' growths.—Fine 'villous' processes are the first stage in the formation of the 'glandular' growths. The villi contain very little stroma, thus differing from the papil-

Fig. 125.

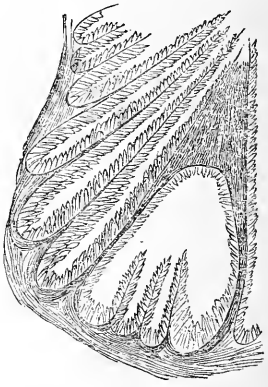
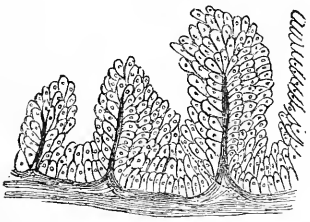


Fig. 124.

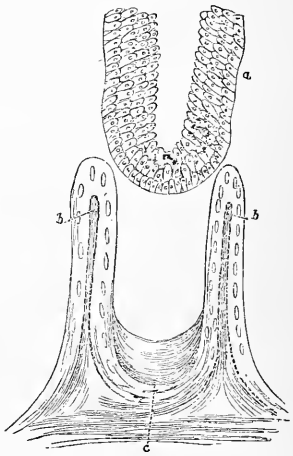


lary growths just described; they are little more than a loop of vessels supported by a little connective tissue, and are covered by several layers of epithelium of columnar form. When closely clustered, they lead to formation of glandular structures; the elevation and lengthening of the villi result in the formation of corresponding depressions between them, the stroma growing upwards

and surrounding these pits or hollows; the result being a series of tubular spaces. The first stage is represented in fig. 124 (from Fox), and the latter one in fig. 125. The glands thus formed are from $\frac{1}{100}$ to $\frac{1}{400}$ of an inch in diameter: they are lined by several layers of epithelium. Further growths of villi may occur in the base of each tube. *Cysts* are formed in the resulting glandular tissue thus: The orifice may be occluded by growing of the opposite walls together, as shown in fig. 125, or by septa growing across the tube, or by the stroma actually growing over and surrounding a cyst already formed within the parent cyst, one result of which is formation of a compound growth, and the glands and glandular masses may be found protruding through or still embedded within the stroma. The process of cyst formation in these glandular structures may be repeated *ad infinitum*.

A gland shut off and divided by septa becomes thus changed into a cavity with highly marked alveolar structures. Some of the alveolar spaces in the ovary originate in a kind of failure in the development as here described, but generally these alveolar spaces contain the same lining as that of the glands from which they spring, and the same tendency to further and fresh formations of glands. Dr. Fox's anatomical description accords with Rokitansky's, Virchow's, and Förster's, but his view as to the origin of these alveolar structures is new and different.

Fig. 126.*



When the stroma grows in excess, we get a dense tissue permeated with alveoli—the condition described by Mr. Spencer Wells as 'adenoma.'

From the formations described by Dr. Fox, the secondary cysts and all the consequent varieties of structures in these diseases, originated in 9 out of the 15 ovarian tumours examined.

Another mode of cyst development within Graafian follicles was observed in a few instances, viz., a growth of glands superimposed one on the other by a process equivalent to budding. This process was found occurring simultaneously with the other mode just alluded to. Alveoli may arise from the close packing of a number of these thin-walled cysts.

* Fig. 126 (from Fox) shows epithelium separated from papillæ.

Dr. Fox's conclusions imply the origin of these varieties of ovarian disease in the interior of Graafian follicles—well or imperfectly developed—and he would account for the origin of the dermoid cysts in the same way, although he has not actually had an opportunity of examining these latter structures.

Dr. Ritchie* endeavoured to prove that the ovum itself becomes developed in an irregular way, and gives rise to some of the forms of ovarian disease. Dr. Fox does not participate in these views.

Diseased processes are liable to occur in these compound or composite tumours. The external or parent cyst may give way on the surface, the contents escaping, and the growth within protruding again, the septa within undergo fatty degeneration. Bleeding may occur within the cysts, and inflammation, formation of pus, &c.

SOLID TUMOURS OF THE OVARY.

Following the classification of Kiwisch, these tumours may be arranged as follows: 1. Hypertrophy; 2. Adipose (dermoid) cysts; 3. Apoplexies of the ovary; 4. Fibrous tumours; 5. Enchondroma; 6. Cancer. To these may be added, 7. Tubercle.

The tumour constituted by simple hypertrophy of the ovary never attains any considerable size, probably not above that of a pigeon's egg. There is a remarkable case, however, recorded by Dr. Bright, in which both ovaries were found after death enlarged pretty equally, and each constituted a firm fleshy tumour nearly six inches in the longest diameter, and having the shape of a kidney. They were taken from a patient who had borne children and who had passed the menstrual period of life. She had experienced pain referable to the uterus, a hard substance had been perceptible over the pubic region, and there had been considerable difficulty in micturition. She died, greatly emaciated and having had jaundice and ascites. The tumours were not malignant in character.†

The *dermoid cysts* have been already considered (p. 577).

The *apoplexies of the ovary* are constituted by inordinate effusion of blood, and coagulation of the same, in Graafian follicles, or by hæmorrhage into pathological structures of various kinds, such as cysts, or in the interstices of growths of cancerous or colloid matters. In the former case the tumours produced by the hæmorrhagic effusion are very limited in extent; in the latter they may be very considerable.

* *Op. cit.* p. 197.

† *Clinical Memoirs on Abdominal Tumours.* New Syd. Soc.'s edition, p. 146.

Fibrous tumours are met with in the ovary, in many respects resembling those found growing so frequently in the walls of the uterus; but a distinct independent pedunculated fibroid tumour of the ovary is a very rare pathological product, many cases recorded as such having really a true uterine origin. The fibrous growths met with in combination with cystic disease of the ovary belong to a different category, and are not so uncommon. The solid independent fibroid tumours of the ovary have been found sometimes to undergo osseous transformation, and the same may probably hold good with reference to other fibrous tumours.

Enchondroma of the ovary is very rarely observed.

Cancer of the ovaries constitutes one of the most important varieties of solid tumour. It occurs in two forms, scirrhous and medullary, the latter being the more common. Cancer occurring primarily is more frequently than not, associated, as has been already stated, with cystic disease of the organ, or it may be found affecting the cystic growths secondarily. The hard form of cancer of the ovary does not attain a large size; it does not exceed the size of a child's head, and is usually very much smaller. Cancer of the ovaries may be found in association with cancer of the adjoining parts—that is, it may spread into the ovaries from the uterus or other organs, and may involve, more or less, the whole contents of the pelvis; and it may, when so found, originate in the ovary or in the adjacent organs. True cancerous disease of the ovary of large size is rare, unaccompanied by similar disease in adjacent parts; and it is also rare to find carcinomatous diseases of the ovary uncomplicated with cystic disease of the same organ. Ascites is very frequently associated with and is an effect of cancerous disease of the ovaries.

Tubercular disease of the ovary has been occasionally met with in conjunction with cystic ovarian disease, not forming a definite tumour, but occurring in the form of granulations scattered over the peritoneal aspect of the cysts.

THE NATURAL HISTORY OF OVARIAN TUMOURS AND OVARIAN DROPSY—THE DATA FOR PROGNOSIS AND TREATMENT.

Here we shall devote a short space to some remarks concerning the natural history of ovarian tumours and ovarian dropsy, including their mode of growth, and duration, also the danger to life, and the mode in which life is destroyed by them.

The rare *fibrous tumour of the ovary* is generally of slow growth,

but some tumours (reputedly) of this nature grow now and then rapidly. When of great size such a tumour may give rise mechanically to a fatal result, by impeding in some way the due exercise of the functions of neighbouring organs, or by giving rise to enormous ascitic distension. The latter secondary effect may threaten the patient's life.

The affections of the ovary to which most interest attaches are those of a *cystic* nature, and in which the disease is constituted by the presence in the ovary of cysts, or of cysts associated with solid matters of various kinds.

The *cysts* of the broad ligament grow slowly, but may after some years acquire great size. The *dermoid or fat cysts* present peculiarities, rendering a separate consideration of them necessary. Their course is usually slow; they may exist for some years without increasing remarkably in size, but they appear liable at any moment to undergo changes of a character fatal to the patient, viz. inflammation, formation of pus, perforation, and rupture. The contents of these cysts, viz. fat, hair, teeth, or other matters, become evacuated into the intestines, into the peritoneum, or into the bladder, and the patient may perish from the effects of the mischief thus set up. The result of injecting iodine into the interior of a cyst of this kind, in a patient under the care of Dr. Alex. R. Simpson, does not offer encouragement to the pursuance of a similar treatment in future.

The other varieties of cystic affection of the ovary (for an enumeration of which see p. 573) require a longer notice. The variations in respect to the number of cysts affected with disease in a particular case are great: their contents also vary. In another circumstance also there is very great variability, viz., in respect to the progress made by what appears to be the same disease under different circumstances. And it is this great variability which infuses to so great an extent the element of uncertainty into our speculations as to the future of particular cases.

In cases where there is *one large simple cyst* of the ovary, with contents fluid or semi-fluid, the course of the case will probably be as follows: The cyst itself goes on increasing in size until it occupies the greater part of the abdomen, pushing the viscera of the abdomen upwards and backwards: the rate of increase may be fast or slow. It may remain in the pelvis, or it may leave this cavity altogether. The further history of this cyst will vary according as more cysts become developed below, or within, or upon it, or according as it remains single or the reverse. If no further

development of cysts take place, this primary large cyst may go on slowly increasing in size, or, having arrived at a certain state of fulness, may remain quiescent, and the patient may live several years, suffering chiefly from the mechanical inconvenience and distress produced by the great enlargement of the abdomen. The walls of the cyst may become accidentally ruptured, and the contents effused into the abdomen, or into some of the adjacent viscera; and under these circumstances the patient may be killed thereby; and, such rupture having taken place, the cyst may go on secreting anew, or no such further secretion may take place, and a cure may be witnessed. The distress and distension may, at a comparatively early period of the history of the case, be so great as to call for surgical relief, e.g. tapping, and if tapping be performed, the cyst may refill again and again with great rapidity, the patient soon sinking from the effects of so great and continuous a loss. In some rare cases the disease has disappeared after one tapping.

The aspect of the case will also vary according to the relations of the tumour. Thus, if the cyst become fixed by adhesions in the pelvis at an early period, the mechanical difficulties thereby produced will be greater than where no such adhesions exist. And this circumstance has an important relation to the prognosis of the case, for the existence of the patient may, under such circumstances, be prematurely cut short by the disturbance of the renal secretion due to pressure on the ureter; such pressure giving rise to distension of the ureter and of the pelvis of the kidney. The functional disturbances of the other abdominal viscera are pretty much the same in cases of large cyst, whether the cyst extend into the pelvis or not.

The foregoing summary includes the principal features of one class of cases as they occur in practice, and it will at once be remarked how very variable is the course observed. It is impossible to ascertain positively what the future course of a particular case will be, although the previous history frequently affords valuable hints on the matter. There is one circumstance in connection with these cases which appears to have received less attention than might have been expected, viz. the possible influence exercised by a large cyst already in existence in preventing the development of fresh cysts. Some apparent anomalies in connection with the results of the operation of tapping in cases of this kind, are in part explainable by admitting that an influence of this kind may be exercised. The operation of tapping has in many cases ap-

peared to accelerate the fatal event; it is certain that the disease has advanced much more rapidly after its performance in a considerable number of instances. In a certain proportion of these cases the fatal event is connected with the rapidity with which the cyst refills after being emptied, but in not a few it would appear that other cysts start into activity which would probably have remained quiescent if the primary cyst could have been left undisturbed.

An element of an unfavourable kind in the prognosis of a case where there is only one large cyst of the ovary, is the rapidity with which that cyst fills or refills after being tapped; danger from this tendency to refill is one less in degree than another which is to be feared at some future time, viz. the starting into activity and growth of other cysts; and there can be no question that, short of a radical cure, the restriction of the disease to one large cyst is one of the best results to be looked for. A careful survey of recorded facts appears to warrant the conclusion that the tendency to cyst formation in the ovary is often temporary, apparently exhausting itself in the production of one large cyst. Thus, supposing that the tendency to new cyst formation has in a particular case been arrested, the patient is less likely to succumb to this disease. The patient may still die from the perpetual drain on her system, caused by repeated refilling and evacuation of this cyst, or in some one of the other ways pointed out. But at first, and indeed for a very considerable time, it is always difficult to say whether the arrest alluded to has occurred.

Compound Cystic Tumours.—Here the tendency to cyst formation is, it may be from the first, not limited as above, but there is a successive production of cysts within, or upon, or below, those first formed. The cysts may grow with excessive rapidity, and the whole abdomen may very quickly become filled. This may occur either primarily, so to speak, or one or two large cysts only having for some time existed, the abdomen becomes suddenly and alarmingly invaded by a multitude of new growths. The prognosis of cases of the kind now mentioned is very unfavourable. It is so bad, indeed, that Dr. Bright was accustomed to use the term 'malignant' in describing such cases. The use of the word 'malignant,' so applied, is liable to lead to misconception, this term being now more generally limited to cases where there is actual cancerous substance present. In the cases now under consideration there is not, except in very rare cases, any cancerous formation at all, the fatality depending on the mechanical inter-

ference of the ovarian tumour with the functions of life. When we find an ovarian tumour suddenly take on rapidity of growth, and are able to satisfy ourselves that this increase in size is not due to simple enlargement and distension of one or two previously existing cysts with fluid, the case is assuming a very threatening aspect. If the tumour become more irregular to the feel, if the fluctuation become indistinct while the tumour is evidently growing fast, these are facts confirmatory of the supposition that the tumour is the seat of rapid and extensive cyst formation.

Composite Tumours.—Another class of cases have now to be spoken of, in which there is formation of a considerable amount of solid matter, together with cystic disease of the ovary, there being simultaneously production of cysts and of the solid matter in question. Such cases often proceed with exceeding rapidity, and their prognosis is bad, the patient being generally killed with a rapidity commensurate with that of the increase in the size of the tumour. Cases are sometimes met with where, at a very advanced stage of the disease, no further increase in size appears to take place.

Lastly come those cases where the ovary, either previously the seat of cystic disease or not, becomes affected with *cancerous disease.* The prognosis in such cases is almost identical with that of cancer in other parts of the body. The disease termed 'alveolar cancer,' or pseudo-colloid disease, is not really cancer. In ordinary cancer of the ovaries, the prognosis is necessarily of a gloomy character, the disease spreading from or to the adjacent organs, and soon destroying the patient. But the diagnosis of these cases is very frequently only made during the operation of ovariotomy.

The *manner in which ovarian dropsy kills* varies excessively in different cases. It is in many instances a slow production of death by exhaustion consequent on repeated drains from tapping. It is due often to intercurrent, slight affections, which would have produced little effect in a healthy individual. Thus when the breathing is mechanically restricted, a slight inflammation of the lungs may rapidly prove fatal. In ordinary advanced cases of the disease, the mechanical disturbance of the functions of the great viscera—the heart, the liver, the kidneys (as by pressure on the ureters), the stomach, &c.—gives rise to various alterations which directly and indirectly impair the vitality of the individual. Restricted as to her food, restricted as to her capability of moving about, suffering from frequent nausea, sickness, prevented from

sleeping, tormented by pains and inconveniences too numerous to mention, the sufferer from advanced ovarian disease presents a most lamentable spectacle. The condition of the patient is often the more painful, as it is quite evident that the other organs of the body are sound, and that, apart from the ovarian disease, there is nothing materially wrong.

The patient may be killed by rupture of the cyst, by inflammation of the same; in compound cysts, by inflammation and pyæmia consequent on softening and breaking down of the septa between the different cysts. Hæmorrhage into the cyst cavity is another accident which may occur. Each and any of these events may lead to a fatal result, but they may also, and do occasionally, bring about the cure of the disease. The rupture of the cyst is an event which is not very rare; the cyst may burst into the peritoneal cavity, or into any of the adjoining viscera, or it may perforate the abdominal wall. Such rupture is often the result of a blow, a fall, or an accident of some kind. When the fluid escapes into the peritoneal cavity, excessive diuresis generally occurs, and the size of the abdomen lessens. This rupture may kill the patient, as before remarked, but it has in a few recorded instances resulted in cure. In certain rare instances the pedicle of the tumour becomes twisted on itself, and the patient is killed by mortification of the tumour.*

The *relation of ovarian tumours to pregnancy* has only quite recently received some attention. Difficulties may attend the process of gestation and parturition, of a mechanical nature; ovarian tumours are, it appears, sometimes liable to undergo, during pregnancy or immediately after delivery, a softening or inflammatory process, attended with danger to the life of the patient. I was acquainted with the particulars of a case in which a woman had borne well and easily five children, having had a large cystic tumour of the ovary during the whole period, but I know of another case where the patient died apparently from rupture of an ovarian cyst, shortly after the labour had occurred. Cases bearing on this point have been recently collected and commented on by Mr. Spencer Wells, Dr. Braxton Hicks, and others.† It appears that in many cases, however, the labour is not unfavourably influenced by presence of an ovarian tumour, but unquestionably this immunity cannot be guaranteed. The

* See cases of this kind in *Year Book of New Syd. Soc.*, 1869-70, related by Mr. Lawson Tait, Dr. Kidd, and Dr. Barnes.

† *Obst. Trans.* vol. xi.

remarkable results obtained by Mr. Spencer Wells in operating on such tumours while the patient is actually pregnant, and without interfering with the progress of the pregnancy, necessarily affect any consideration of a prognostic nature applied to such cases.

From the foregoing account of the natural history of ovarian disease, it will have been made evident that in different cases of ovarian tumour very different terminations are to be expected; and further, that it is possible, in some instances, but not in all, by careful attention to the facts and peculiarities of the case before us, to form an opinion as to what the future of the case will be. The question which it behoves us most seriously to consider is, what result may be expected to occur in particular cases; what probability there is that the patient will survive the disease for a given time—what, in fact, are the chances for or against the patient's life. The interest felt attaches for the most part to the prognosis of cases of ovarian dropsy or tumour in which the tumour is as large or larger than the head of a child, because these are the cases concerning which our advice and opinion are most frequently requested.

What is the natural termination of these cases, if left to themselves?*

It is exceedingly difficult to get facts to throw a light on this subject. We know well enough that there are cases in which women live almost or quite the natural term afflicted with ovarian dropsy; we know also that many are killed by the disease, its duration being very short indeed. But how many live with ovarian dropsy, how many die from its effects—these are the questions to which we desire an answer. It is obvious that the desired information can only be obtained by examining the records kept of all cases, indiscriminately, of ovarian disease. We do not require simply the 'extraordinary' cases, but the ordinary ones. In the work of Dr. Robert Lee, entitled 'Clinical Reports on Ovarian and Uterine Diseases,' † will be found some materials of this kind. Dr. Lee's facts possess this value—that they are the experience of one individual, a well-known and accurate observer, and extending over a considerable number of years. Dr. Lee

* The unprecedentedly brilliant results of ovariotomy of late years happily render it less necessary than it was to reproduce in this edition the following analysis of facts observed *before* ovariotomy was so successfully practised. Still, however, this analysis may be usefully retained.

† Churchill: Lond. 1853.

gives clinical reports of 180 cases of 'ovarian' disease, which I have analysed for the purpose above mentioned, and with the following results:—

Of these 180 cases there are 44 only which are available for the present purpose. The others cannot be used, for one of the following reasons: the facts related concerning them do not conclusively indicate the *ovarian* nature of the tumour; or the case is defective, inasmuch as no result is given, and it is impossible to say whether the patient died or recovered; or the ovarian tumour found to be present was so small that the case does not come within the category now under consideration.

These 44 cases ended as follows:—

In 32 of the cases a positively fatal termination is recorded as having occurred, these cases having been either allowed to pursue their course unchecked, or tapping having been performed; in 22 of these cases only are data furnished as to the time the patients lived. The average duration was 1·9 year, that is to say, on the supposition that 'rapidly fatal' means fatal within one year. In 1 the inference is that the patient died; in 1 the inference is doubtful, but the probability is that it ended fatally; in 3 the patients were apparently in a dying state, or the disease was proceeding rapidly to a fatal termination.

On the other hand, we find that in 1 case the disease did not reappear for twenty-six years; in 1 but little progress had occurred in three years; 2 patients were alive after a period of two and three years respectively; 2 patients died from ovariotomy; 1 died from the effects of an exploratory puncture.

We may thus range the 44 cases into two series, in the first of which will be placed the cases absolutely fatal, in the second those in which a fatal result did not occur, or where, if it did occur, it was due to a non-natural cause.

On the most favourable interpretation of individual cases, it thus appears that 84 per cent. of these cases died, and, so far as the majority of these are concerned, the death occurred within two years.

On the other hand, in 16 per cent. of the cases an opposite result ensued, or there is at all events no proof that such an opposite result might not have ensued. It is natural to conclude, however, from an examination of the above list, that 16 is a very high figure, and that, had all these cases been allowed to pursue their natural course, the actual percentage of favourable results would have been nearer 10 than 16.

The general conclusion deducible from Dr. Lee's cases is that, taking the case of a woman, the subject of 'progressive' ovarian tumour or dropsy, to the extent contemplated in the above-mentioned category of cases, the chances are as ten to one that the case will end fatally in less than two years, the disease being left to itself, or palliative measures only, such as tapping, being employed.

Mr. Safford Lee, who was the first to examine the question now at issue statistically, collected 131 cases with the view of ascertaining the duration of ovarian dropsy under *ordinary* treatment. In 123 of these cases the duration was mentioned.*

In 38 the duration was 1 year	In 5 the duration was 6 years
„ 25 „ „ 2 years	„ 4 „ „ 7 „
„ 17 „ „ 3 „	„ 3 „ „ 8 „
„ 10 „ „ 4 „	„ 17 „ „ from 9 to 50
„ 4 „ „ 5 „	

It thus appears that in 76 per cent. (94 out of 123) the duration was under five years. But it is necessary to analyse more fully the data in question, in order to compare them properly with those afforded in Dr. Robert Lee's cases. It is more satisfactory, as before remarked, to have the whole experience of *one* individual. In Safford Lee's table we find 20 cases of Dr. Kilgour's; of these 20 cases 17 died in three years and under, viz. 85 per cent., a figure very closely approximating to that obtained from Dr. Lee's cases. In 12 cases reported by Dr. Ashwell, 9, i.e. 75 per cent., died in the same period—three years and under. In 10 cases reported by Mr. Safford Lee himself, 9, i.e. 90 per cent., died within three years. The experience of one reporter, Dr. Macfarlane, was more favourable, for of 14 cases reported by him the duration was four years or under in 4 cases, and of the other 10, 4 survived twelve years, and 4 as long as sixteen years. Dr. Macfarlane's experience would seem to have included a larger number than usual of exceptional cases.

As a guide to actual results, which may be expected in practice, the cases of Dr. Robert Lee, and the particular cases just referred to as contained in Mr. Safford Lee's tables, are worth more than those collected from various sources, for reasons already stated. Such cases as those in which it is recorded that the disease lasted twenty, thirty, or even fifty years, do undoubtedly occur; much mischief formerly resulted, however, from looking on such cases as the typical ones, while the large majority of the cases, the end of

* *On Tumours of the Uterus*, p. 117.

which is naturally death in a much shorter time, have been considered as the exceptional ones.

Taking everything into consideration, we shall not be probably far wrong in drawing from Dr. Lee's and from Mr. Safford Lee's cases the conclusion that the probable duration of a case of ovarian disease of progressive character is, in 85 to 90 per cent. of the cases, two or at the most three years; of the apparently 'stationary' or chronic cases, the prognosis is more favourable, but in such cases the disease is liable at any moment to start into fresh activity.

The foregoing observations give some idea—an idea which cannot be very wide of the truth—as to the nature of the evil we have before us when a patient presents herself with ovarian dropsy. The first question we naturally put to ourselves with a case of the kind to decide upon, is, does this case belong to the fortunate series, the 10 or 15 in the 100, or is she one of the 90 who must die in the course of two or three years, if unrelieved?

It must be confessed that at present we have, as a rule, no means of enabling us to decide—at an early period of the growth of the tumour, and when the tumour does not exceed six or seven inches in diameter—what the future of the case will be. In some few cases the cancerous nature of the tumour is obvious at an early period; in some few cases, also, the great unevenness and irregularity of the surface point to the presence of several cysts—a circumstance indicative for the most part of rapid growth—and these cases lay open their future before us more quickly; but in the large bulk of cases it is not so. We generally have to wait until the tumour has grown to a larger size before we are able to say much as to the prognosis, and it is the rapidity of growth, taken together with the nature of the growth itself, which then guides us to an opinion.

So long as a tumour, which is smooth externally, and apparently composed of a single cyst, continues tolerably quiescent, increasing but slowly, and without evidence of formation of fresh cysts (for the determination of which examinations must be made from time to time), so long our prognosis will be tolerably favourable, and we may expect that the case will prove to be one of the fortunate '10 per cent.' series. Rapid increase, new formation of cysts, addition of solid matter to the tumour, addition of ascites, increased pressure signs in the pelvis, rapid refilling after tapping—all these are signs of bad augury, and should induce us to place the patient in the unfavourable series.

CHAPTER XXVIII.

DISEASES OF THE OVARIES AND BROAD LIGAMENTS—*continued.*

DIAGNOSIS OF OVARIAN TUMOURS FROM UTERINE TUMOURS.—Enumeration of the various Forms of such Tumours—Diagnosis as affected by the Condition of the Menstrual Function—Question of Pregnancy—Diagnosis as affected by other Particulars—History, Results of Examination, &c.—Use of Sound—Fluctuation Test—Diagnosis by Exploratory Incision.

DIAGNOSIS OF THE NATURE OF AN OVARIAN TUMOUR.—Enumeration—Complications—Duration—Condition of the Surface—Tapping as a Means of Diagnosis.

DIAGNOSIS OF OVARIAN TUMOURS.

IT must be confessed that the diagnosis of the presence and precise nature of an ovarian tumour is now and then beset with extreme difficulty. The majority of cases are readily recognised, but there are numerous exceptional ones.

In a former chapter the diagnosis of a supposed abdominal tumour has been carried up to a certain point (see Chap. VI.). We will now take it for granted that it has been determined that there really is an abdominal tumour present, and further, that such tumour is *either ovarian or uterine.* We have, in the first place, to distinguish between these two categories.

The UTERINE series include: pregnancy, polypus, fibroid tumour; distension of uterus by fluid (menstrual or other fluid accumulations); distension by gas; abscess of the uterus; carcinoma of the fundus of the uterus; and fibro-cystic tumour.

The OVARIAN series include: simple encysted ovarian dropsy; multiple and compound cysts; composite tumours, partly cystic and partly solid, including 'alveolar degeneration,' 'glandular' tumours; cystic cancer; dermoid cysts; and solid tumours of the ovary—fibrous tumours, 'adenoma,' cancer, and simple enlargement; hydatid cysts; to these must be added, though not really ovarian, cysts of the broad ligament, also termed Wolffian cysts.

The Diagnosis between Uterine and Ovarian Tumours as

affected by the Condition of the Menstrual Function.—The method to be pursued in order to determine the nature of the tumour will necessarily be somewhat different under different circumstances. Supposing that the patient inform us that *there has been no menstrual discharge for some time previous*, we should immediately suspect pregnancy, and the next thing to be done would be to ascertain whether the size of the tumour, its shape, &c., fall in with this view of the case. If the tumour had only lasted a few months—say six—and there had been no menstruation for six or eight months, this would constitute a sort of preliminary justification of the pregnancy theory. If the tumour had lasted six years, and menstruation had been absent for six months, this would be against pregnancy, but not absolutely so, inasmuch as there might be a tumour *plus* pregnancy. The mere fact that menstruation is not going on should, under almost all circumstances, induce us to give the pregnancy theory a full consideration, and proper means should be taken to decide the point definitively before attempting to proceed further. This will be accomplished by ascertaining the physical characters of the tumour by external examination, comparing the results with those laid down as the ordinary results of such examination in cases of pregnancy (see chapter on 'Diagnosis of Pregnancy'). If the external examination by hand, stethoscope, &c., give no indication, or insufficient at least on which to form a conclusion, then a vaginal examination, an examination of the breasts, &c., would be required.

The use of the sound is never to be thought of as long as it is unproved that there is no pregnancy. This is an important fact to be kept in view in cases similar to the one just now alluded to, viz. where a tumour having existed for some time, the possibility of pregnancy having been added thereto does not at first enter the mind of the patient or the attendant.

The question of pregnancy therefore comes before us either *primarily*, as in cases where the tumour is of recent growth—i.e. has not been in existence longer than six or eight months—or *secondarily*, where the continual presence of a tumour, during a period of upwards of nine months, has been substantiated.

The investigation of the history of the case and the examination practised, giving, we will suppose, no evidence of pregnancy, the next step to be taken is to prove a negative, and to determine positively that the patient is *not* pregnant. This second question is more difficult, or may be more difficult, to deal with than the

first, for very obvious reasons. Thus the case before us may be of this kind: the patient has not menstruated for four months, there is a tumour in the abdomen the size of the gravid uterus of six or eight months, there is no sound of a fœtal heart, the breasts are painful, perhaps swollen, the uterus is, from the vagina, felt to be enlarged, but there is no ballottement. In such a case the observer will, on the data mentioned, find it difficult to exclude pregnancy—to prove the negative. It may be that his ear is defective, his touch untutored; the case may still be one of pregnancy; it may be one in which—as is not so very rare—there is a slight menstrual-like discharge for one or two months, or longer, pregnancy really dating from an earlier period; or it may be pregnancy with destruction of the embryo, and hydatidiform degeneration of the ovum, as in an instance recorded at page 165. The condition of the orifice of the uterus would, under such circumstances, help the observer either to prove the desired negative, or be sufficient to show him that the making of the diagnosis must be for a while postponed. The state of the lower segment of the uterus, also, would very greatly assist in the desired solution. Thus, in the case of an abdominal tumour as large as a seven or eight months' gravid uterus, it would be sufficient to prove the required negative, if we found that there was absolutely no evidence of the os uteri being continuous with a rounded tumour, perceptible to the touch equally behind, in front, and at the side of the same. The precise value of the signs derivable from digital examination of the os uteri, in suspected pregnancy, has already been considered at length (see p. 58). The point to which it is necessary to direct attention, in this place, is that when the suspected abdominal tumour is of the size of the six months' gravid uterus, and upwards, the vaginal digital examination is of the greatest service in enabling us to prove the negative, when the case is really not one of pregnancy. It is particularly valuable in those cases where a tumour having existed for some considerable time—say a year—there is a possibility of pregnancy being also present.

In trying to prove this negative, we may fall in with cases of enlargement and distension of the uterus from other causes than pregnancy; one of these, occupying a sort of intermediate position, viz., hydatidiform degeneration of the ovum, has already been alluded to. The others are—retention of menstrual fluid, other collections of fluid in the uterus, gaseous distension. With respect to the diagnosis of pregnancy from each of these conditions, no

great difficulty is likely to be experienced. Retention of the menstrual fluid, giving rise to distension of the uterus simulating pregnancy, is almost unknown except in girls who have never menstruated at all. Hydrometra—dropsy of the uterus—is excessively rare; so also physometra—distension with gas—is uncommon. Here only it is necessary to remark on the possibility of their occurrence, for the attending or preceding circumstances would at once indicate the diagnosis, to one alive to such possibility. The mere element of time might be sufficient to show, in a particular case, that the enlargement of the uterus could not be due to pregnancy. The point at which our investigations will or may enable us to arrive in particular cases, will be found to be either an affirmation of the pregnancy theory, or a negative, to the following extent, that, admitting the possibility of pregnancy, it cannot be conceived that the tumour present is constituted entirely by the gravid uterus. Various shades and differences of the latter will hold in different cases.

The pregnancy theory will not come before us if the patient be decidedly past the climacteric age, but it will be well to bear in mind the exceptional cases of pregnancy at a late age, previously alluded to (p. 144).

The above considerations enable us to assume that the tumour present is not due to pregnancy, to gaseous or fluid accumulation in the uterus, but they do not of course assist in carrying the diagnosis beyond this point.

The next class of cases to be considered are those in which *menstruation is present.* If the patient be menstruating regularly, and the fact be undoubted, it may be almost certainly concluded that the tumour is not due to either one of the following conditions—viz. pregnancy, distension of uterus by fluid or gaseous accumulation, abscess of the uterus.

It is perhaps necessary here to remind the reader that the conditions mentioned in the above list of uterine and ovarian tumours are not the only ones with which pregnancy may be confounded.

The condition of the menstrual discharge has enabled us to exclude from the list above given certain cases. We have now to point out the diagnosis of the conditions which remain. The state of the menstrual function will not help us further on the road with any degree of certainty. Thus, in fibroid tumours of the uterus, in carcinoma of the fundus uteri, in the various forms of ovarian disease, whether cystic alone, or composite tumours, or

solid tumour, menstruation may be still regular, or comparatively so, or it may be completely absent. Presence or absence of menstruation may be thus equally observed in certain uterine and in certain ovarian tumours.

The menstruation criterion failing, we have to fall back upon the data afforded by other particulars of the history of the case, and the results of examination, abdominal, vaginal, &c.

We may dispose of several of the minor and less frequent of the causes of abdominal, uterine, or ovarian tumour, now remaining on our list, in a very few words.

Carcinoma of the Fundus Uteri.—The symptoms attending the presence of this rare disease would be likely to resemble those attendant on polypus of the uteri, i.e. copious bloody discharges, leucorrhœa, but in some cases such have been wanting. The supra-pubic examination by the hand would substantiate little beyond the existence of a tumour of a rounded character, the size of which is limited.

We may get rid of the *simply solid tumours* of the ovary in one paragraph, with one or two reservations. It is very rare to find a *fibroid* ovarian tumour of any considerable size, but the diagnosis of a large tumour of this kind from a large tumour of similar physical characters growing from the uterus would be next to impossible. Thus simple cancer of the ovary rarely produces a tumour of any magnitude, although certain *composite* tumours of the ovary, partly cancerous, may grow to an enormous size. Moreover, simple cancer of the ovary is rare, unless in cases where there is extensive carcinomatous affection of the adjacent or other parts, and consequently profound constitutional disturbance. *Enchondroma* of the ovary is a very rare disease, the existence of which even has been questioned, and it need not therefore detain us. With *simple hæmorrhagic effusions* we have no practical interest in this place. *Hypertrophy of the ovaries*, in the single case recorded by Dr. Bright, produced a tumour not larger than the kidney, and this was a most rare phenomenon. The *Wolffian cysts* of the ovary rarely exceed the size of an orange, but when larger the tumour could not be distinguished from an ordinary ovarian cyst. Adenoma of the ovary may constitute a hard tumour of considerable size. *Dermoid* cysts are rare, but in their physical characters, mode of growth, &c., do not present any very characteristic symptoms. They do not, unless in very rare cases, grow so large as the other more common cystic tumours of the ovary. The *hydatid* tumour of the ovary is very rare, and might

be expected to be witnessed only in cases where the liver is affected, and in conjunction with symptoms of chronic or acute peritonitis. Practically, its diagnosis does not possess much interest for us in this place.

Without much difficulty, most of the conditions mentioned may be severally eliminated from the consideration. And that being done, the diagnosis now rests between the following conditions:—

Fibroid tumour of the uterus.
Polypus of the uterus.
Fibro-cystic tumour of the uterus.
Cystic disease of the ovaries, viz. simple, multiple or compound cysts.
Composite tumour of the ovary.
Fibroid tumour of the ovary.
Dermoid cyst.
And to these might be added, the case of a large Wolffian cyst.

The conditions in question give rise to tumours which in many particulars resemble each other. The characters which they have in common are the following:—

The tumour is, or may be, rounded in shape.
It may be slightly movable in the abdomen.
It may have a more or less chronic course.
It may be associated with serous effusion into the peritoneal sac.
The firmness and resistance of the tumour may be equal in each.
The size of the tumour does not, unless in the case of a very large tumour, offer any help in the discrimination.

It is quite true that generally we find marked differences in respect of some of the foregoing characteristics; but these differences are not always so considerable, and by relying too implicitly on distinctions of this kind mistakes are frequently made.

The diagnosis between the various pathological conditions just mentioned is to be made by careful external and internal examination, and by consideration of the previous history. We have now no scruples as to using the uterine sound, having excluded pregnancy from the consideration by the previous analysis.

In many cases certain characters of the tumour, as felt through the abdominal parietes, are almost conclusive as to its ovarian origin; one of these is, presence of *distinct fluctuation* from one border of the tumour to the other. If the tumour were constituted by a fibrous tumour of the uterus, or polypus of the uterus,

there could be no fluctuation. Fluctuation of this kind might be observed in that rare disease, fibro-cystic tumour of the uterus. It is hardly necessary to mention that we are presuming that all cases of ordinary ascites, or of ascites *combined* with tumour, or of distended bladder, have been excluded from the question by following the instructions contained in the preceding chapters. The *absence* of fluctuation does not, however, indicate that the tumour is not ovarian.

If we examine the uterus from the vagina digitally and by means of the sound, and clearly ascertain that the os is natural, that the cavity of the uterus has its normal length, the conclusion to which we may come as regards the diagnosis of the tumour before us is, that it cannot be a polypus of the uterus; but this is the extent of the knowledge afforded. Polypus of the uterus may be excluded in other ways from the consideration. Thus, the previous history in cases of polypus is usually one of occasional hæmorrhages, profuse menstruation, leucorrhœa, &c. The tumour when due to such a cause is very hard, externally it has the shape of a pregnant uterus, it is rare that it exceeds in size the gravid uterus of six or seven months, and the presence of a tumour *within the uterus* is generally plainly to be made out by a digital examination from the vagina and by the use of the sound. In some cases the polypus partially occupies the vagina. The diagnosis, so far as regards the exclusion of polypus of the uterus from the list above given, is generally easy. The diagnostic signs are in brief as follows: there is a hard, smooth, well-defined, abdominal tumour of slow growth, the uterus evidently enlarged from the vagina, its cavity greatly lengthened, a hard tumour is perceptible within the uterus.

But it is not so easy to distinguish fibroid tumours of the uterus of large size from others of the above tumours not uterine in origin, and there is in fact very considerable difficulty frequently encountered in making a diagnosis between them. It will now be pointed out how these difficulties may be best surmounted. It is useless to attempt to distinguish the ovarian tumours *inter se* until we have thus separated the uterine and ovarian tumours one from the other.

They have the following characters in common:—the pelvic cavity may be found distended by a tumour firm to the touch in both cases. The abdominal tumour may be firm to the touch in both cases. It may be of slow growth in both cases. It may be rounded, smooth, and have a tolerably uniform surface, in both

cases. The disturbance of the functions of menstruation and defæcation may be equal. In the shape of the tumour we find no absolutely distinguishing sign.

Let us pursue the investigation further. Supposing that by examining *externally* through the abdominal walls we are able to detect fluctuation in places, or even supposing that we find that in certain parts the tumour is softer and not so resistant as at others, this would enable us to say the tumour is of ovarian origin. To this statement there is one single reservation—that if the rare fibro-cystic tumour of the uterus were present, the sign in question might prove deceptive. The absence of such partial fluctuations, or of such partial softness, does not, however, prove that it is uterine. Or, supposing we found the surface of the tumour very unequal, presenting hard, smooth, rounded, distinct elevations three or four or more in number, and varying in size from that of a walnut to that of an apple or larger—these elevations being evidently integral parts of a central mass, the consistence of which is identical with that of the elevations—this would prove it to be a case of fibrous tumours of the uterus. On the other hand, in the case of very large fibrous tumour, the surface is quite smooth and uniform, and irregularities and eminences of the surface are then quite wanting. Rarely, the hardness generally characteristic of fibrous tumour is wanting. In a few cases there is actual softness and apparent fluctuation. Such a condition would make the diagnosis very difficult. The *duration* of the tumour would in some degree assist, but we are now and then misled by the patient's assertion that the tumour has existed only a short time when the opposite is the actual fact. A large fibroid tumour sometimes exists for years unknown to the patient or to any one.

The *internal* examination as a means of discriminating between ovarian and uterine tumours must now be considered. What has been previously mentioned respecting the diagnosis of tumours felt through the vaginal walls (see p. 89) may be consulted with advantage, but the more salient points must be here again briefly mentioned.

And before going further, we must describe what may be termed the *natural history of an ovarian or extra-uterine tumour, so far as relates to its growth and the effect of that growth on the position of the uterus.*

A fibrous tumour growing on the peritoneal surface of the uterus, and reaching a large size, and an ovarian tumour, may affect the uterus in like manner. Thus the fibrous tumour may

in its growth carry the side, or back, or front of the uterus—according as it may happen to be placed—along with it; the cavity of the uterus may be thus, in the case of a very large fibrous tumour, very considerably elongated; or, it may leave the cavity of the uterus unaffected, the body of the uterus undergoing not an expansion but an actual atrophy, and under such circumstances the small atrophied uterus is flattened and pressed downwards into the pelvis, while the large fibrous growth mounts up into the abdomen. It is evident that the internal examination by the sound will reveal correspondingly different signs, according as one or other of the events mentioned happens. Take next the case of an ovarian tumour. Here the circumstances are precisely analogous. The ovarian tumour, in its growth up into the abdominal cavity, either draws the fundus uteri up with it, thus necessarily lengthening the uterine cavity, or it presses the whole uterus downwards, the length of the uterine cavity being in nowise altered. Again, whereas it most commonly happens that the ovarian tumour presses the uterus forwards while engaged in elongating it, the reverse may be the case, the uterus being sometimes posterior, and the pelvic part of the ovarian tumour may push the uterine fundus to one side of the pelvis, elongating its cavity at the same time. Another effect which may be produced on the uterus during the growth of an ovarian tumour, is, propulsion downwards of the lower segment of the uterus concurrently with dragging upwards of the superior segment. This may happen when the ovarian tumour fills the pelvis and grows there, at the same time that it grows also upwards into the abdomen.

And now, with the above facts before us, the value of the signs derivable from digital examination *per vaginam*, and from the use of the sound, will be more intelligible.

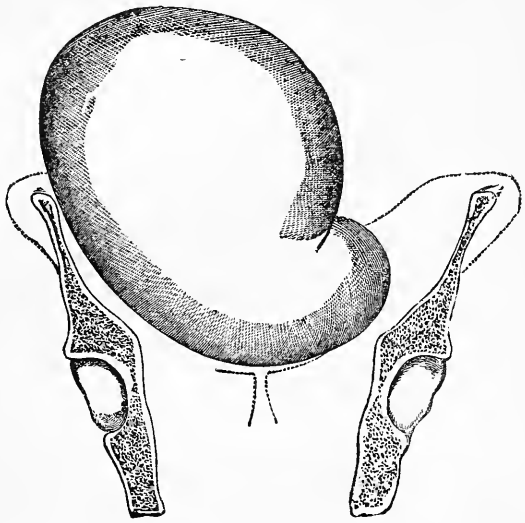
If there be a large tumour in the abdomen and the sound pass into the uterus for a distance of three inches or upwards, and the cavity of the uterus be found more anteriorly than it should be, this will probably indicate its ovarian nature, but not certainly, for it may be a case of large fibrous tumour growing behind the uterus. The history of the case will now probably throw light on the subject. Thus, if the abdominal tumour increase quickly, it is ovarian (the reservation being again made as to presence of the rare fibro-cystic tumour of the uterus); or if the abdominal tumour be distinctly fluctuating, it is ovarian. It will be well to recollect that the sound might pass in this direction and in this manner in a case of large polypus of the uterus. In a case which

came under my notice, the vagina was drawn upwards and ended in a cone just behind the os pubis; the cervix was obliterated so far as its vaginal portion was concerned, and the sound entered for upwards of three inches. There was a hard unyielding tumour felt behind the vagina, extending upwards into the abdomen. My first impression about this case was that it was a large fibrous growth from the posterior part of the uterus; but having examined the abdomen, and finding there a tumour which was as large as the head of an adult, the diagnosis made was that the tumour was ovarian; and this diagnosis was justified by the rapidity with which the abdominal tumour subsequently increased in size. Again, another case may be mentioned to show particularly how the diagnosis is made, and on what data it rests. The patient, æt. 26, had been married four years, never pregnant, abdomen greatly enlarged, suffering severely from dyspnœa; she was very weak and ill. Catamenia absent for eight months, but there had been a slight show fourteen days before. Examining *per vaginam*, the uterus was found to be small, atrophied, flattened, and pushed a little downwards; its long axis lay horizontally instead of nearly vertically; above it was a tumour. Examining through the abdominal walls, there was found to be marked fluctuation below a line extending from the splenic region to the right crista ilii, tumour well defined by percussion, but not by palpation. The diagnosis was ovarian dropsy. The vaginal examination showed absence or enlargement of uterus, the abdominal showed fluctuating, distinct tumour; the results of the two methods of examination indicated clearly the diagnosis. These two cases are not mentioned because they presented anything remarkable in the way of difficulty— rather the reverse. Fig. 127 gives a view of the abdominal tumour in another case of ovarian dropsy, where the tumour was of considerable size. The uterus was pushed downwards and backwards.

To appreciate more particularly the value of the indications given by the sound, we may divide our cases into two classes— those in which the uterine cavity is found decidedly elongated and those in which it is not. The cavity may be decidedly elongated, as above stated, from a fibrous growth of the uterus or from presence of an ovarian tumour. In all cases it is not possible during life to diagnosticate between these two conditions, but generally the attendant circumstances enable us to do so pretty easily. In the second of the cases above related, the fluctuation of the abdominal tumour, its rate of growth, and absence of

uterine enlargement, were conclusive; in the first of the cases, the rate of growth too was one of the points which were of importance. But we sometimes meet with cases where the uterus is lengthened, the tumour so close to the uterus as not to be separable from it; where the tumour grows slowly, and where,

Fig. 127.



nevertheless, the case turns out to be ovarian. When the tumour grows rapidly, this is in favour of its ovarian nature, but the absence of this rapidity of growth does not prove the contrary. To mistake a uterine for an ovarian tumour is to commit an error of greater importance than a mistake of an opposite kind, for the reason that serious operations are undertaken when the tumour is supposed to be ovarian, which would not be contemplated if the tumour were considered uterine. The following are the most reliable distinctive signs in a case presenting difficulty:—

For ovarian tumours, are, rapidity of growth, impediment of the circulation in the lower extremities, evidenced by presence of œdema, varicose state of veins, severe constitutional disturbance, e. g. great weakness and debility, emaciation, and pelvic continuous pain. These signs are in fact the signs usually present in cases of solid tumour of the ovary of cancerous nature, or in cases of cystic cancer, where the growth happens to be for a time stationary. Absence of such signs is, however, not so strongly evidence of a negative kind, for some chronic ovarian tumours give

rise to very little mechanical or other disturbance. If, in a case of elongation of the uterine cavity, the sound passed quite into the centre of a large tumour, this would almost, but not quite, conclusively indicate its character. If the sound passed laterally, or marginally as it might be termed, as regards the tumour, and the tumour were felt from the vagina to be fluctuating, this would favour the theory of its ovarian nature.

The cases in which there is no ascertainable elongation of the uterine cavity come next. Here the diagnosis between ovarian and uterine tumours is not usually attended with so much difficulty. The tumour, if uterine, is most likely to be a large, slow-growing fibrous tumour, causing little inconvenience except from the great size to which it may attain. If the tumour were fluctuating, as ascertained by a vaginal or abdominal examination, it could not, in all probability, be uterine—the rare fibro-cystic tumour of the uterus being excluded from consideration; but if there were no fluctuation, considerable difficulty might be experienced in deciding whether the case was one of large fibrous or other solid tumour of the ovary, or a fibrous semi-pedunculated tumour of the uterus. There are, in fact, no signs enabling us positively to distinguish between them.

It will be found that in some cases in which, theoretically, difficulty might have been anticipated, no such difficulty occurs, and we are able at once to say the case is not uterine. This conclusion is most safely come to when we are able, by the use of the hand, or by digital examination, one or both, to separate the uterus from the tumour.

It must be recollected that sometimes the uterus becomes embedded in and surrounded by a mass of disease of ovarian origin. The composite tumours of the ovary occasionally grow in this manner. The signs afforded by use of the sound might, in such a case, lead to the supposition of uterine disease; the *general* symptoms would usually be of ovarian character.

Having made use of the sound, having carefully examined the abdomen in the hypogastric region, what is the result at which we may expect to arrive in the diagnosis of uterine from ovarian tumours? It is probable that the number of cases in which insuperable difficulties occur in arriving at a correct judgment on this point will year by year become less, but it is the fact, nevertheless, that the cases are not few in which an erroneous diagnosis has been made. There appear to be some cases in which the diagnosis is really impossible. The difficult cases are those in

which a slow-growing, not large, tumour exists, which it is just as probable is ovarian as uterine. A pedunculated or even a sessile fibrous tumour of the uterus may occupy the same position, present the same physical signs, produce even the same symptoms, as a fibrous or solid tumour of the ovary. We may make a diagnosis which is an infinitely probable one, but which it is just possible *may* be wrong, viz. that the tumour is uterine because an ovarian tumour of this kind is so rare; and this is all we can do or may be able to do in such a case. If we encounter a tumour of this kind at an early period of its growth, and before there has been afforded an opportunity of knowing whether it be a slow-growing tumour or not, the diagnosis is still more difficult, for then the tumour may be a non-fluctuating specimen of ovarian cystic disease, or any one of the other varieties of ovarian disease, or it may be a uterine fibrous tumour. The nature of such cases can only be definitively diagnosticated by waiting, unless indeed we use a grooved needle and endeavour to obtain thus some notion of the nature of the contents of the tumour. When the necessity for a diagnosis of this kind arises, the tumour is generally a pelvic one, not having yet passed up into the abdomen.

Looking carefully over the records of cases where mistakes have been made in diagnosis—where ovariotomy, for instance, has been attempted, but the tumour found to be uterine—it will be seen that the element of 'time' was not allowed to have its due weight in the decision arrived at prior to the commencement of the operation. Thus in one case the tumour found to be 'uterine' had existed for four years; in another there was a cyst connected with the uterus of eight or nine years' duration; in another a 'large fleshy tubercle of the uterus' of 'many years'' duration; in another a solid vascular tumour connected with the uterus six years. It is probable that in these cases the tumour was solid, at all events non-fluctuating, and it is likely that similar mistakes may be avoided in future, when hard tumours simulating ovarian tumours are present in the abdomen, by attention to the diagnostic value of this element time.

The diagnosis of *fibro-cystic tumour of the uterus* is one of great difficulty, because we have here the two things combined—a solid outgrowth from the uterus which itself contains cysts. The difficulty arises from the physical resemblance this bears to a case of cystic disease of the ovaries. To estimate aright the difficulties of the question and the best method of surmounting them, careful study of the cases actually published is essential. Some of these

cases are given at length in the chapter on 'Fibroid Tumours of the Uterus.' Mr. Spencer Wells mentions two circumstances of assistance in the distinction: one is that the colour of the cyst-wall in fibro-cystic uterine tumours, when laid bare by abdominal incision, is darker than that of ovarian cysts; another that the cysts in the former case contain a thin serum with 5, 10, or 15 per cent. of blood intimately mixed with it, and not separating until after standing some hours.*

Diagnosis by exploratory incision.—In some cases the operation of ovariotomy is undertaken with full recognition of the fact that it *may* be found that the tumour is uterine in origin and that it may prove in consequence non-removeable. After the incision into the abdomen is made the hand is carefully passed downwards by the side of or behind the tumour, whereupon the information necessary is obtained. Adhesions are not generally present so as to prevent this exploration in cases of fibroid tumour of the uterus. These exploratory operations are not generally attended with much risk; the mortality is about one in four from such procedures.

We have here spoken of the difficulty of the diagnosis between ovarian and uterine tumours. Between these two series and *cystic enlargement of the kidney*, a very rare disease, the diagnosis is equally difficult: see page 130 for mention of cases illustrative of this subject.

DIAGNOSIS OF THE NATURE OF AN OVARIAN TUMOUR.

The diagnosis having been advanced so far that we are able to pronounce the tumour present to be of ovarian character, it remains to determine more precisely the nature of the tumour.

It will be unnecessary to consider here the smaller and less important of the tumours originating in the ovaries; the remarks previously made enable us to dispense with this, and we shall now only consider the diagnosis of those which are practically important, and which may attain great magnitude, or at least produce considerable and marked enlargement of the abdomen.

The ovarian tumours now before us include:—

Simple, multiple, and compound cysts.

Composite tumours, and cystic cancer.

Solid tumours.

In addition to the conditions in the foregoing list, a diagnosis of the nature of an ovarian tumour will not be complete which does

* *Diseases of the Ovaries*, vol. i. p. 362.

not have regard to the complications liable to be observed. One of the most common of these is *ascites*; another, the existence of which is, however, more liable to be overlooked, *pregnancy*.

The diagnosis of the several ovarian tumours above mentioned, one from another, is sometimes easy, at other times extremely difficult, at other times again simply impossible, by any kind of examination we may devise, short of exploration by means of tapping, and in some cases we cannot even then obtain such a perfect knowledge as may be desirable. In the majority of cases, however, we can get as much information as is needed to enable us to decide as to the treatment. Attention is now directed simply to the determination of the *pathological* character of the tumour. There is another kind of diagnosis, a sort of mixture of diagnosis and prognosis, the consideration of which comes under the head of 'Treatment.'

The Age of the Tumour.—It will be usually found practicable to reduce the list of possible conditions in the case before us, by attention to the prominent characters of the history, progress, and physical characters of the tumour. Thus, if we find the tumour has been growing rapidly, and has only dated from, say a year previously, we may pretty safely exclude from consideration the simply solid tumours of the ovary and dermoid cyst. If the tumour has been growing slowly, say three years or longer, and the subject of the case be a young or, at all events, not a very old woman, this would lead us to consider the possibility of the case being one of dermoid cyst; if on examination, under such circumstances, a distinctly fluctuating tumour is ascertained to be present, this would militate against such a view of the matter; but if the tumour is found to be non-fluctuating, it may be either a case of dermoid cyst, or a case of composite tumour, or, possibly of compound cyst of the ovary unusually slow in growth. A slow-growing, non-fluctuating, well-defined, smooth tumour, which on other grounds has been determined to be 'ovarian,' in a woman not old, is more likely, however, to prove to be a dermoid cyst than anything else. Judging from experience, the actual diagnosis of these dermoid cysts during life and before operation is not easy, and this is partly due to the fact that this condition is sometimes met with in association with the more ordinary form of cystic disease of the ovary. Respecting the fibrous tumour of the ovary, it is to be remarked that its diagnosis from other tumours of the ovary is not so difficult as its diagnosis from uterine pedunculated fibrous tumours. Its very slow growth, hardness, and well-defined out-

line, are the principal characteristics. 'Adenoma' of the ovary, which may give rise to a solid tumour of considerable size, would be distinguished by its comparative rapidity of growth.

When we have before us a case in which the abdomen has become markedly enlarged in the course of the previous year, this enlargement being due to the ovarian tumour alone, and not partially to ascitic effusion superadded, we may nearly safely leave fibroid tumours and dermoid cysts out of the consideration. The further diagnosis is guided by the size, the consistence, the resistance, smoothness or inequality, rapidity of growth, of the tumour, by the symptoms to which it gives rise, and by the general condition of the patient's health.

We may take the chief of these criteria one by one, and ascertain what information is to be procured from them as to the nature of the tumour.

The *condition of the surface of the tumour* affords, necessarily, more information respecting the physical character of the tumour than can be obtained in other ways. Supposing we find the tumour perfectly smooth and uniform, and offering equal resistance at all parts of its superficies, whether felt from the vagina or through the abdominal walls, such a tumour is likely to be made up of one large cyst. To confirm this view of the case, we might have the additional fact that the tumour presents fluctuation from one side to the other, and from above downwards. We might not get fluctuation, and nevertheless the case may be still one of simple cyst, for fluctuation cannot always be made out when the cyst is very tight. Thus the fluctuation test might or might not be available. A smooth uniform tumour, not fluctuating in the manner alluded to, might prove to be one of compound cysts of the ovary, one large cyst being the common covering for a large number of smaller cysts within it. The fact that the tumour is large, smooth, and uniform as regards its surface, even when fluctuation is absent, is presumptive evidence that the tumour is not a composite tumour of the ovary; it is more likely to belong to the other series, though on this point there is no rule. Sometimes we find that while, generally speaking, the tumour is smooth and rounded, the hand, slightly pressed inwards, encounters one or more rounded bodies *within* the larger tumour. This is a condition of things only met with when there is one large cyst, not tightly filled with fluid, and having within it other cysts; and under such circumstances we get therefore more information as to the nature of the interior of the tumour. Care must be exercised not to confound with this

condition one which rather closely resembles it, viz. the combination of ascites and ovarian tumour. Such a mistake could only be the result of great carelessness, but still it might be made. An event which is quite possible, is that there may be a large cyst giving the fluctuation sign at all parts of the surface, and which therefore conveys an idea that the whole tumour is made up of this cyst, whereas it may prove afterwards that within this cyst is a considerable mass made up of several smaller cysts. The circumstances are sometimes such, that until a portion of the fluid in the large containing cyst is evacuated by tapping, the true nature of the case cannot be made physically evident.

On the other hand, when we find the tumour *unequal* as regards its surface, we draw inferences which may be approximatively stated as follows: If the tumour present a large rounded eminence at one point, a second eminence of a like character at another, the depressions between forming divisions across which fluctuation is not transmitted, and we find the tumour to be made up of two or three such large eminences, the whole forming a tumour which possibly extends up to the umbilicus or some way beyond it, then we have probably to do with a case of multiple cyst of the ovary, or possibly there may be a tumour growing from both ovaries. Fluctuation evident at all parts of the surface, limited as above stated, would be evidence nearly conclusive that the case is not one of compound cysts, or one of composite tumour. Absence of such fluctuation might be due to great tightness of the cysts, or to great thickness of the walls of the cyst, to the presence of jelly-like contents; or it might be that each of the large cysts contained other smaller ones.

To take another case: we find the tumour unequal as regards its surface, it presents a rounded eminence at one part, and fluctuation is here evident; while close to it is felt a portion of the surface harder and more resistant; at other situations the surface is perhaps still more irregular. Such a condition might be due to presence of compound cysts, or to presence of a composite tumour, either glandular (cystic sarcoma, alveolar degeneration) or cystic cancer of the ovary; or there might be tumour of both ovaries. Rounded nodular eminences on the surface of an otherwise smooth tumour may indicate either presence of small cysts at the situations in question, or of cancerous nodules; but we may draw one important inference from their existence, viz. that either the mass beneath these nodules is composed of solid matter of some kind or other, or that the whole tumour is a compound cystic one: the

growth of small cysts *on* the surface of simple cystic tumour, or multiple cystic tumour of the ovary, is not common.

It is only in the case of rather small tumours, e.g. tumours not exceeding the size of the head of an adult, that much difficulty is found in determining, approximatively, at all events, the physical construction of the tumour. When the tumour is of large size, if it be a case of simple or multiple cysts, there is evident generally, at some period or other, fluctuation, and the surface is smooth and comparatively even. But in the case of a large composite tumour, or in the case of a large compound cystic tumour, there is at some situations a marked peculiarity as regards the surface, in respect to the consistence and degree of resistance of the kind above alluded to. The diagnosis of the nature of the smaller tumours requires a more particular examination. It has been already stated that a moderate-sized rounded tumour, in which fluctuation is not evident, may be either a simple cyst with very tight walls, having very dense contents, or a tumour of compound or composite nature. The tumour may be irregular on the surface or not: if irregular, this will help us in the way previously remarked, but if not, the diagnosis has to rest on other data. Under such circumstances, something is often to be made out from the general view of the case, apart from the physical characters of the tumour. Rapidity of growth, in the case of a non-fluctuating tumour, would incline us to believe it to be one of compound cysts or a composite tumour. 'Rapidity of growth' may be considered to be present if, in the course of six or eight months, the tumour has attained the size of a pregnant uterus of seven or eight months' gestation. Rapidity of growth, alone, means nothing, for we see repeatedly that large cysts, after being emptied by tapping, refill in a very short space of time; but if we have before us a non-fluctuating tumour, the fact is of some importance in determining the construction of the tumour.

Is there anything which can be learned from the *position* of the tumour, as to whether it be a purely cystic tumour, or a compound cystic tumour, or a composite tumour? Nothing absolutely. We may find a large semi-cystic tumour occupying the abdomen, and not at all engaged in the pelvis (the more common event); or we may find a part of such a tumour in the pelvis and a part in the abdomen. And if the tumour be made up of compound cysts, or if it be a composite tumour, we may find a portion of the same in the pelvis, or the whole may have passed upwards into the abdomen.

We may now consider the diagnosis of that class of cases in which, having made out by previous examination that the condition present is either 'compound cystic tumour' or composite tumour—it is considered desirable to pursue the analysis still further. Speaking of these cases generally, it is to be remarked that in each the growth of the tumour may be very rapid, but it is not necessarily so. In each of them there is cyst growth going on, which growth may proceed with different degrees of vigour at different parts of the tumour. The superficial part of the tumour may be therefore solid to the feel, or it may be chiefly cystic. The degree of resistance communicated to the touch is not the same in all cases, even when the tumour is identical; and during life no very precise differentiating indications can be drawn from data of this kind. The degree of hardness may not in a case of cystic cancer be very different from that present in a case of compound cyst. We may often, however, learn something from the condition of the surface of the tumour. Thus the presence of hard knobs or excrescences on the surface is presumptive evidence for cystic cancer, if we find they are unlike small cysts in shape or other physical characters. Absence of such knobs is not conclusive of the non-cancerous nature of the tumour. Again, the association of ascites in these cases is of some importance. Ascites may be present in association with all kinds of ovarian tumours, but it is more frequently found to be present when the ovarian tumour belongs to one of the series now under consideration; it is most common when the tumour is composed of cystic cancer. And hence, when the tumour presents knotty hard elevations, and there is ascites, a suspicion would arise that the tumour is of a cancerous nature. The other points to which attention should be directed, for confirmation or otherwise of this suspicion, are of a general character. The more simple cystic disease of the ovary produces, at first certainly, but little effect on the health of the patient; but in the case of cystic cancer of the ovary, we find that although the tumour is not very large, and has possibly not existed a very great length of time, yet the health of the patient has notably given way.

Cystic cancer of the ovary has ordinarily a course differing from that of glandular tumours. The latter often grow persistently, and with such great rapidity that the whole abdomen may become, in a short space of time, distended to the utmost by a mass made up partly of cysts, partly of a sarcomatous substance. In cystic cancer the tumour is not so large.

The 'compound cyst' tumour of the ovary, on the other hand, presents characters somewhat allied to those observed in more simple cystic disease; but there is great variability; and this arises from the fact that the tumour remains, sometimes, quiescent for a time, and then, perhaps suddenly, starting into active growth, produces rapidly enormous enlargement of the abdomen.

Possible Complications of Ovarian Tumour, to be considered in arriving at a Diagnosis.—When an ovarian tumour rapidly increases in size, the question should always occur—Is the enlargement due to *pregnancy?* If the tumour be of a solid character, or partly so, this is more important, but in all cases the first question which should be determined has reference to the possibility of pregnancy having supervened. Proper means must be taken, by vaginal examination, auscultation, &c., to decide this question. Experience has shown that the mistakes which have been made in undertaking operations in ignorance of the presence of pregnancy, have arisen, not from the inherent difficulties of the diagnosis, but from circumstances generally controllable.

Ascites is another complication which is rather common. It is more frequently present when the ovarian tumour is irregular in outline than when the shape is more rounded and equable. It is sometimes necessary to get rid of the ascitic fluid by tapping, in order to explore satisfactorily the ovarian tumour.

Another important though rare complication of ovarian tumour is presence of gas within it. Sometimes an ovarian cyst bursts into the intestinal canal, and gas enters the cyst. Thus an ovarian tumour, one day dull on percussion and fluctuating, may on another be found to have become tympanitic. The occurrence is rare.

Tapping as a means of Diagnosis of the Nature of a presumed Ovarian Tumour.—Under some circumstances it is necessary to tap an ovarian tumour in order to release the patient from suffering; at other times this operation is undertaken as a curative measure alone, or combined with other proceedings which will be discussed in their proper place. At other times, again, tapping is had recourse to in order to throw further light on the diagnosis.

The tapping, when performed for the former of the above reasons, can be always made subservient to the further diagnosis of the nature of the tumour.

An important piece of information relates to the nature of the *contents* of the tumour. Sometimes when tapping is performed it happens that no fluid can be made to pass through the canula on withdrawal of the trochar. This may be due to great viscidity

of the contents, or to the fact that in the interior of the tumour there are a multitude of small cysts, or to the circumstance that the tumour is of a solid nature. By passing a probe through the canula something more may be learnt. The fluid which comes away is different in different cases, as already stated, and it does not appear that examination of the fluid affords any particular indication as to the kind of ovarian tumour present. To this there is one exception in the case of the dermoid cysts of the ovary, which contain often a fluid which has this peculiarity, that on cooling it undergoes transformation into a solid mass resembling butter. Presence of such fluid would show that we have to do with a dermoid cyst. In a case related by Dr. Alex. R. Simpson,* there was removed from an ovarian cyst of this kind a single red hair, and it was subsequently found that the cyst contained a mass of tangled hair. It was further noticed that this hair had the same colour as that covering the pubes of the patient.

In cases of the more common kind, however, the nature of the fluid will not inform us as to the nature of the ovarian tumour.

To distinguish between an ascitic and an ovarian fluid is important. Ascites and ovarian dropsy should be distinguished on other data (see p. 116) than an examination of the fluid procured by tapping. The microscopic and other characters of the fluid are of service in determining its origin (see p. 575). The cells and granules vary greatly in size even in the fluids from different cysts of the same ovary: the fallacies involved in a dependence on these characters for a diagnosis are, that the ovarian fluid may have burst into the abdomen, become ascitic in fact, and thus mingled with peritonitic effusion; further, lymph and pus are not uncommonly found in ovarian cysts—hence a microscopical examination of the fluid may serve to strengthen an opinion, but alone ought not to decide one. The results of tapping in cases of fibro-cystic tumour of the uterus would not materially aid the diagnosis. Tapping and examination of the fluid removed is an important means of diagnosis in cases where the tumour is possibly of *renal* origin. Urea would be searched for under such circumstances (see p. 130).

If, after tapping and emptying an ovarian cyst, we find the whole of the ovarian tumour gone, we may reasonably conclude that the case is one of simple ovarian cyst. Frequently it happens that immediately after tapping there is evidence of the existence of a

* *Ed. Med. Journal* March 1862 p. 886.

second cyst, or of a solid mass or masses which were not perceptible before, and of whose existence as parts of the tumour we could not otherwise have been informed, and a case which at first appears to be one of simple cystic disease may thus prove to be one of compound cystic tumour, or of composite tumour of the ovary. In order to diagnosticate more particularly the nature of fluctuating tumours of the abdomen in conjunction with the operation of tapping such tumours, I devised, some time since, an apparatus for probing the interior of the cavity containing the fluid. It consists of an ordinary canula, which is provided with a perforated diaphragm of india-rubber. The canula, armed with a trochar, is thrust into the tumour, the trochar is then withdrawn and replaced by a long metallic probe having the thickness of the ordinary uterine sound, thirteen or fourteen inches in length, and having a rounded blunt point. The india-rubber diaphragm tightly grasping the probe prevents escape of fluid, and the observer is now in a position leisurely to examine thereby the interior of the cavity, to ascertain its dimensions, its shape, the size and configuration of the solid contents, &c.* Such probing is of course only possible when the cavity is full of fluid. In a case of ascites mistaken for ovarian dropsy, the use of this instrument would inform the operator of his error. In a case of ascites with ovarian tumour the relations of the latter could be more readily made out than by examining the tumour in the ordinary way after evacuation of the ascitic fluid. Further, when there is a large cyst containing fluid and extending down into the pelvis, a combined digital vaginal examination and an internal probing such as above described would, in some cases at all events, give information as to the presence of other smaller cysts in the lower border of the tumour, of whose existence we could not otherwise obtain a knowledge. This latter circumstance seems important, for the reason that our curative procedures may vary according as we find evidence, or no evidence, of presence of smaller cysts growing upwards from the ovary.

If after tapping we find a tumour still remaining, this may be another cyst from the same ovary, contained within the first, or simply in juxtaposition with it; or it may be a solid tumour or mass of cysts; it may be a cystic tumour of the other ovary, or it may be a tumour of the uterus. The diagnosis of this secondary tumour should be made carefully and with due consideration of the possibility of pregnancy.

* *Obstetrical Transactions*, vol. 1.

CHAPTER XXIX.

DISEASES OF THE OVARIES AND BROAD LIGAMENTS—(*continued*).

Radical Treatment of Ovarian Tumours and Dropsy.
Ovariotomy.—Statistics of the Operation—Objections—Advantages—Indications—Contra-Indications—Description of the Operation and Instruments required—Wells's Trochar—Various Forms of Clamp—Author's new Buckle-Clamp, &c.—After-Treatment.
General Management—Special Management of Shock, Hæmorrhage, Pyæmic Disorders, &c.
Author's Table of Cases of Ovariotomy.
Palliative Treatment.—General Treatment—Tapping—Iodine Injections—Pressure—Tapping from Vagina and Rectum.

RADICAL TREATMENT OF OVARIAN TUMOURS AND DROPSY.—OVARIOTOMY.

This is a subject on which it is pleasant to write, and profitable to discourse. Surgery has many claims on humanity for the benefits it has conferred. Here we have the latest, indeed it may be said the most signal, achievement of medical and surgical skill of modern times. Quickly, yet certainly, the grand operation of ovariotomy has taken its place, a permanent place, among those procedures to which mankind is so largely indebted for the relief of suffering, for the averting of certain and in many cases speedy death.

It is no longer necessary, as was the case so recently as four or five years ago, to offer an apology for the operation of ovariotomy, to dilate on its advantages, and to combat the arguments of those opposed to it. The signal successes of the numerous operations of late years—one operator, Mr. Spencer Wells, counting his cases by hundreds—the less numerous but equally decided results of other operators, have now removed by the demonstrative method the objections which were entertained to a formidable operation, and ovariotomy is now the recognized operation for, and the recognized best method of dealing with almost all cases of ovarian tumour and dropsy where the operation in question can be performed.

The operation of ovariotomy, first suggested by William Hunter, was first performed in America, and has proved of late years largely successful. It consists, as need hardly be stated, in excising the whole of the diseased ovary, an incision for this purpose being made in the abdominal parietes. At first the operation was received with disfavour, though some few operators were tolerably successful. Dr. Clay of Manchester first performed the operation on an extensive scale, and his success attracted further attention to the subject. In the metropolis the operation next obtained a firm footing, mainly through the success of Mr. Spencer Wells, and during the last twelve years the number of successful operators, not only in London but elsewhere, has become very considerable. The results obtained by operators of late years have been very much more favourable than was the case a few years since. Taking the results of numerous operations of late years by the best operators, the recoveries appear to be from 70 to 80 per cent.

This result may be compared with that of cases of ovarian dropsy left to themselves, from which comparison it will be seen that of 100 individuals coming before us affected with progressive ovarian cystic disease, 90 may be expected to be dead within two years if nothing beyond palliative measures be adopted; out of the same number, from 60 to 70 may by ovariotomy be saved, and saved permanently, from death. The operation of ovariotomy has this peculiarity, that it almost absolutely cures the patient, a possible drawback being—what is shown to be an exceedingly rare occurrence—the possibility of the other ovary becoming affected subsequently, and thus necessitating a second operation; a second possible drawback also being that when the ovary is affected with cancerous disease, ovariotomy will not be of permanent benefit.

As regards what may be termed the *older* set of statistics of the operation, may be cited the valuable statistical account of ovariotomy published by Mr. John Clay of Birmingham, including all cases of which he had been able to obtain particulars up to the year 1860:—

In 212 cases of completed ovariotomy the operation was successful.
In 183 „ „ „ „ „ „ unsuccessful.
In 24 cases partial excision was performed: 10 recoveries and 14 deaths.
In 13 cases an operation was performed, but extra-ovarian tumours only were removed: 3 recoveries and 10 deaths.
In 82 the operation was begun, and abandoned on account of adhesions; of these, 58 recovered from the operation, and 24 died.
In 23 cases ovariotomy was attempted, but abandoned in consequence of the disease being extra-ovarian.

These statistics of Mr. Clay's include a number of operations undertaken at various times and in various places, and with very numerous drawbacks, want of knowledge as to diagnosis and treatment, &c., and they do not in any way represent the state of the operation as it now stands; but, taking these 395 cases of ovariotomy, it will be seen that 55 per cent. were saved, and cured of a disease which would have left alive only about 10 or 15 per cent. at the end of two or three years; that is to say, assuming the correctness of the calculation as to duration of life under these circumstances previously made (see p. 591).

The results of operations performed in England, Scotland, and abroad during the last eleven years are even more favourable. On the whole, the present aspect of the operation warrants us in taking 70 to 80 as the percentage of cures which may be expected when the operation is undertaken by experienced operators.

It is not always possible to complete the projected operation, adhesions interfering with the removal of the tumour or the diagnosis being inaccurate. In the 537 cases tabulated by Mr. Clay, of operations of all kinds, in 82, or 15 per cent., this difficulty occurred. This percentage has been considerably lessened with advancing knowledge; and the failures to complete the operation have not exceeded 10 per cent. in the experience of recent operators. Thus in Mr. Spencer Wells's experience there have been 400 completed cases and 45 uncompleted; a considerable number of these latter being *exploratory*, that is to say the operation was undertaken with a knowledge of the possibility of an impossible operation. This is as nearly as possible 10 per cent. of the cases. We may therefore accept 10 per cent. for the present. The risk of immediate death which the patient runs from an attempt thus frustrated, amounts, taking Mr. Clay's statistics, to this—that in 29 per cent. of these failures death results. In Mr. Spencer Wells's cases the mortality from incompleted or exploratory operation has been about 30 per cent. And it may be expected, therefore, that in about one-third of the cases where an operation is begun but abandoned, a fatal result will ensue within a short time after the operation.

We have also to consider the operation of ovariotomy in connection with possible mistakes in diagnosis, for if it be not always possible to make a correct diagnosis, this must be considered in recommending an operation which may fail, and which so failing may nevertheless kill the patient. If we turn to Mr. Clay's statistics, we find that the number of mistakes in diagnosis is very

considerable. Thus, in 36 cases out of the total 537 operations, the tumour was extra-ovarian. A careful scrutiny of the facts as to these cases shows, however, that in most of these the mistake was such as would, with our present knowledge as to diagnosis, be avoided.* It may not be always possible to be absolutely certain that the tumour is what we believe it to be—a cystic growth from the ovary—but by exercising the necessary care in arriving at a diagnosis, it is possible that the importance of this element in the consideration will be very greatly diminished.

I forbear here to recapitulate the arguments thought necessary three years ago in controversion of the asserted dangers of the operation, the asserted fallacies attending statistical enquiries, the confounding together of operations performed under favourable and unfavourable circumstances, &c. Ovariotomy is an operation requiring skill, judgment, and care. It is likely that a case will fail in unskilful hands which would have done well in the charge of a more experienced operator. But this is an argument which applies to the operator rather than the operation, and which holds equally true in regard to all the more important recognised operations in surgery. It demands necessarily also that diagnostic skill of a high character should be possessed by the operator.

We may next consider the *indications for ovariotomy.* The average opinion among those in favour of this operation may be stated as being to the effect that when the ovarian tumour is growing fast, and when by reason of this, or in some other manner, life is threatened at no distant period, the operation is to be recommended. But it is necessary to be more explicit. If our examination convinces us that the tumour is of cystic nature, that it is growing fast, that it is made up of three or more cysts, and the general health is threatened, this seems a case for ovariotomy. Equally so if the tumour be partly cystic, partly solid, this solid matter not being cancerous. The alveolar tumour of the ovary falls under the same category, and also cases of dermoid or fat cysts 'progressive' in nature. If the ovarian tumour be simply fibrous the operation is less likely to be required, but even here the tumour may excite so much irritation by its presence that an operation is a better procedure than letting the tumour alone. These solid tumours have an atmosphere of doubt about them, however, which puts them out of ordinary categories. The opera-

* The prediction in this paragraph, left as it stood in the last edition of this work, has also been verified by later statistics.

tion in such cases is often an 'exploratory' one, the operator determining beforehand to remove the tumour if possible (see 'Diagnosis').

Upon the next class of cases the decision is sometimes not to be made at once. They are cases in which there is only one cyst in the ovary, or possibly two, and the disease is not strictly a progressive one; or, at all events, this quality of it has not yet declared itself. In some such cases, ovariotomy is not at all events immediately required, but there are cases in which there are good reasons for preferring to recommend ovariotomy; viz. where there is rapid formation of fluid requiring frequent tapping, and threatening life in this manner. A tendency of this kind is hardly less destructive to the patient than the tendency to the rapid formation of other cysts. The arguments for ovariotomy in cases where the 'badness' of the case falls short of that just spoken of, are, that the earlier the operation is performed the safer it is, and the less risk also that the operation will be interfered with by the presence of adhesions. The difficulty experienced in deciding as to what is the best thing to be done in individual cases is one which cannot be got over by any amount of generalisation on the subject, and in a doubtful case small things turn the balance.

Another class of cases in which ovariotomy might be performed are those in which, although the case is not a 'favourable' one for operation, the disease is so far advanced that the patient must otherwise certainly die soon, and where the operation might possibly save life.

It will be observed that the indications for ovariotomy chiefly resolve themselves into two—the necessarily progressive nature of the disease, pathologically considered, and the presence of such marked failing of the general health as to show that from radical measures only good can be expected. There is a special class of cases, as pointed out by Dr. Tyler Smith, in which patients insist on the performance of the operation, the idea of a possible operation looming in the distance being, to them, more intolerable than the present risk.

The Contra-indications.—The first contra-indication is 'difficulty of performance,' a difficulty which it is often, but not always, possible to foresee. This difficulty arises from *adhesions*. The diagnosis of the presence of adhesions is sometimes quite impossible to make, but, on the other hand, it is to be borne in mind that, in some cases, the presence of very extensive adhesions has not been found an insuperable difficulty in the way of the per-

formance and completion of the operation. In a case of simple cyst I operated on some time since, the cyst was at every portion of its surface adherent, yet it was removed, and successfully. When a portion of the tumour is in the pelvis, we may often ascertain whether adhesions are present or not, by pressing the tumour upwards from the vagina, and by the mobility or otherwise of the tumour thus found to exist. Mr. Wells suggests that the tumour should first be tapped, and pressure then made from below, in order to ascertain the presence or absence of this mobility. But it is to be remarked that the shape of the lower part of the tumour might prevent its being thus moved from below, adhesions being quite absent. A careful examination through the abdominal walls may show that there is mobility of the tumour; this indicates absence of adhesions. Again, as pointed out by Mr. Baker Brown, the skin can be grasped and separated from the tumour if adhesions be absent. These signs, however, for the most part affect the diagnosis of presence of adhesions *anteriorly*. The intestines are liable to contract very close adhesions with the tumour in long-standing cases, and these adhesions are posterior. Respecting existence of posterior adhesions, the results of examination are not conclusive. Practically, I am certain that the question as to the presence or absence of adhesions is one which must frequently remain unanswered until the operation is begun. Adhesions may be expected in cases where the patient has been repeatedly tapped. *Anasarca* of the lower extremities is justly regarded by Mr. Spencer Wells as not necessarily a bar to the operation, for, as he observes, it may depend solely on mechanical pressure of the tumour. I have myself seen very marked œdema of the lower extremities, from the presence of retroversion of the uterus, together with extreme distension of the bladder. When it is dependent on associated disease of the kidneys or other viscera or on cancerous disease, œdema is undoubtedly a contra-indication. One of the worst cases of œdema of the lower extremities I have seen was a case in which on operation the tumour turned out to be cancerous. And the remarks of Mr. Wells in reference to *ascites* are equally to the point. If the ascites be an ascites mechanically produced, it is of less consequence. In the case of a small, *recent* ovarian tumour, where there is a good deal of ascites, the operation is contra-indicated, because there is a greater probability of the disease being of cancerous nature. It not unfrequently happens that there is much ascites and a very large tumour. In such cases, as a rule, the ascites is no obstacle what-

ever to the operation; in some respects it is an advantage, as adhesions are less likely to interfere.

The contra-indications which have been laid down by some operators, such as the health being very much broken down, where the drain of albuminous matter by repeated tapping has been great, the disease being of a colloid nature, or otherwise materially departing from the true cystic character, where, from the habits of the patient, other organs have suffered, organically, to the serious detriment of their functions—these restrictions are undoubtedly very much to the purpose if the success of the operation alone be considered, and they offer an important addition to the arguments in favour of 'early' operation. To act implicitly on these recommendations would be, however, to shut out from some patients who might be cured the possibility of such cure; and, as before remarked, there is a class of cases in which the operation is justifiable as a *dernier ressort*. This is a point on which, however, it seems hardly possible to lay down laws. Each case has a law of its own, which law it is the business of the practitioner to discover. Dr. Keith of Edinburgh has recorded a case in which he performed the operation when the cyst was actually in a state of gangrene, and with success, the patient being snatched literally from the jaws of death. Dr. Wiltshire with Dr. Watson operated on a patient dying from hæmorrhage into an ovarian cyst under equally critical circumstances; the patient survived.

Cases where the tumour turns out to be cancerous are of course the most unfavourable of all, not so much as regards the immediate prospect of recovery from the operation as in respect to its ultimate effect, or rather want of effect, in saving life. The age of the patient, and other circumstances, such as the composition of the tumour, the presence of adhesions, &c., do not appear to materially influence the result, the patient having an almost equally good chance of recovery if the operation is capable of being completed.

The decision for or against ovariotomy should be left to the patient or her friends: it is for them to take the responsibility. It is our duty, firstly, to make a diagnosis as accurate as possible, taking the whole circumstances, past and present, into consideration; secondly, to make to the best of our ability a prognosis of the case, and to lay before the patient and her friends the results arrived at; and if it be possible to state the chances for or against her, numerically, it is better to do so. For reasons which have been already sufficiently alluded to, it is occasionally most difficult to put our prognosis into a numerical shape, but until we can do

so, a decision for or against ovariotomy cannot be come to satisfactorily.

The decision for ovariotomy necessarily involves the decision against *tapping*. The question regarding tapping will be considered presently.

The Operation of Ovariotomy.—The success of the operation of ovariotomy most unquestionably depends very much on the method of its performance, and the care taken of the patient before, during, and after the operation.

The *preliminary* treatment consists in elevating by every possible means the patient's vital power. For town patients a short sojourn in the country is often useful; for country patients who have to be operated on in town, a short preliminary residence in the latter may be recommended. The food given must be easily digestible, hours regular, the bowels kept moderately open but not loose. The moral treatment is not less important: it certainly adds very much to the patient's chances of recovery when she is herself hopeful on the subject; and means should be taken, appropriate to the case, for inspiring her with courage and resolution. It is essential to possess the services of a good nurse. To provide a room in a well-drained house, well-lighted, quiet, well-ventilated, and capable of being heated, is, it is hardly necessary to remark, also essential. Hospital patients cannot be satisfactorily treated in wards containing other patients. Absolutely essential it is also that the patient be not subjected to the influence of emanations arising from wounds or from decomposing animal matters. The room selected should be one having no communication with other rooms from which such emanations may possibly arise. The more complete the isolation the greater are the chances of success.

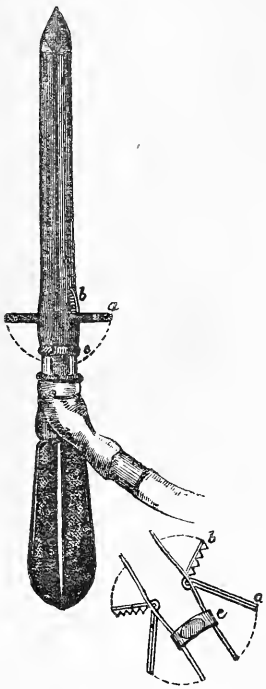
The operation itself should be performed under chloroform or some anæsthetic agent. Bichloride of methylene has of late been largely employed by Mr. Spencer Wells, chiefly, I believe, on the ground that it is less liable to produce sickness than chloroform. I do not know that this implied preference of this agent to chloroform is well founded, for I have seen very troublesome sickness follow administration of bichloride of methylene. In my own comparatively small number of operations, I have used chloroform and have been satisfied with it, but it must be skilfully administered; and it appears very important to use as little in *quantity* of the anæsthetic as possible. It is very important that the patient should have had no solid food of any kind on the day of the

operation, in order to prevent sickness and peristaltic action of the intestines. The liability to subsequent vomiting is one which is best dealt with by giving as little chloroform as possible. The air of the room should have a temperature of 60° during and for a short time after the operation; a kettle of water should, especially in dry states of the atmosphere, be kept boiling in the room so as to maintain the necessary moisture of the air. Hot and cold water, in clean vessels, must be provided in sufficient quantity. The operator and his assistants must be thoroughly free from all suspicion of post-mortem taint, and before the operation the hands of each should be well washed, a strong brush being used for the nails. There are very good reasons for believing these precautions to be very essential. The sponges used should be new and large, and it is necessary to count them before and after the operation to see that none are missing.

The legs having been well covered up by flannel, the patient is placed on the back, at the end of the operating couch, the legs hanging down or slightly supported. I agree with Dr. Tyler Smith in preferring the semi-recumbent position, this giving facilities for the tapping part of the operation. The catheter should be used to empty the bladder before proceeding to operate. This should be done by an assistant specially and solely employed for this purpose. Mr. Spencer Wells employs an ingenious device for preventing fluid running out of the wound and wetting the patient, consisting in covering the abdomen with a large sheet of waterproof material, adhesive on one side, in the centre of which is an oval aperture corresponding to the line of the proposed incision. By means of a strong knife an incision is made from the umbilicus to just above the pubic symphysis, this incision being in the middle line. The several layers of the abdominal walls are successively cut through until the peritoneum is arrived at, and any vessels cut through secured by ligature before proceeding further. Care is now required not to mistake the peritoneum for the cyst wall, a mistake which may be committed. A director should be used as the peritoneum is approached. The first part of the operation is completed when by this incision the ovarian tumour is opened. Ordinarily this, the *short* incision, as it is termed, is sufficient: later on, it is sometimes found necessary to extend the incision a variable distance above the umbilicus. After the peritoneal cavity is opened, it is necessary to guard against the protrusion of the intestines at the wound. This is effected

by the assistants, one on each side, who are directed to carefully maintain the edge of the incision in apposition with the surface of the cyst. If the intestines escape, they are covered by drawing the abdominal wall forwards over them, and if necessary pressed back by means of flannel wrung out of warm clean water.

Fig. 128.



The next step is to ascertain that the continuance of the operation is possible. If the tumour is found to be solid, no further steps should be taken until by means of the hand introduced above or by the side of the tumour it has been ascertained that the tumour is actually removable. In some cases this may be dispensed with, the tumour being of cystic character, but even in these cases it is well to carry out this intra-abdominal exploration at this stage of the procedure. If adhesions be at once encountered, such adhesions must of course be separated in order to allow of this exploration.

The incision first made may be sufficient to allow of the extraction of the tumour without lessening the size of the tumour, but generally this lessening is necessary; and the operator having ascertained that the completion of the operation is possible, and having broken down any adhesions met with in the manner to be presently described, a large trochar is thrust into the presenting cyst and its contents evacuated. A good apparatus to use for this purpose is the siphon-trochar invented by Mr. Spencer Wells, and improved upon by Dr. Murray. The tube is about the size of the finger, and, by an ingenious mechanism supplied by Dr. Murray, after being plunged into the cyst, the canula is firmly fixed to the cyst wall (see fig. 128). It can be easily detached again from the cyst. The trochar is withdrawn through a slit in the india-rubber tube, which slit then closes and allows the fluid to pass away through it. Another excellent form of the instrument is provided with rather blunt claws, which can be readily made to seize the edges of the perforation in the cyst. The advantage of a large tube

for rapid removal of the fluid is great; it is also important to prevent the fluid running into the peritoneal cavity. These objects are well secured by use of one of the above mentioned instruments. If the cyst contents be semi-solid or very gelatinous, this instrument cannot be employed, but ordinarily it is very useful at this stage of the operation. It may be necessary to empty more than one cyst; in this case the second may generally be perforated from the aperture in the first. If the cysts are very small and numerous, it may be necessary to break them up by passing the hand into the centre of the tumour; but before doing so we should be absolutely certain that adhesions such as to prevent completion of the operation are not present. Having thus lessened the bulk of the tumour, it is drawn out at the aperture and supported by the hands of assistants, care being taken that no dragging is allowed. It is evident that unless great care be exercised much mischief may be done at this moment. The tumour having been drawn out, the pedicle is to be secured. Before alluding to this part of the operation we must consider the question of adhesions. On exposing the tumour we may find that it is adherent; and it may be adherent to the bladder in front or laterally, to the intestines, or everywhere. The most difficult adhesions to surmount are those between the tumour and the bladder, or the intestines or omentum, but adhesions in other situations are generally not real obstacles. These adhesions are not to be separated by the knife: they are to be carefully broken down by the fingers or by the handle of the scalpel. An 'adhesion clam' has been invented by Mr. John Clay for this particular purpose.* The actual cautery is exceedingly safe and useful in separating thick and strong adhesions. The bleeding from vessels in these adhesions requires to be carefully looked to: it should be arrested by torsion of the vessels or by ligature, for which latter purpose fine silver wire is the best, or by the actual cautery in a manner to be presently described; a slight continuous drain going on from one of these vessels after completion of the operation may destroy the patient. Great care is necessary, when the intestines are adherent, to avoid perforating them: in very long-standing cases the difficulty of avoiding such perforation is or may be very great. When the cyst cannot be separated from the intestines, Mr. Spencer Wells advises that a piece of the cyst be cut off and left attached, the lining membrane of the cyst being also removed.

* See *Medical Times and Gazette*, vol. ii. 1862.

When the tumour is quite clear of all adhesions, and the necessary diminution of its bulk effected, the pedicle is to be secured. In order to perform this part of the operation satisfactorily, the tumour must be properly sustained by assistants. In most cases it is better to apply a temporary ligature and cut away the bulk of the tumour, in order that the pedicle may be more conveniently dealt with.

The best means of dealing with the pedicle has been an anxious subject of discussion among operators, and various methods have been had recourse to. The following is an account of the various methods which have been employed :—

The Ligature.—A needle, armed with stout thread or whip-cord or Indian hemp, is passed through the pedicle, and the pedicle is thus secured in such a way that each half has a separate ligature; another ligature, for safety's sake, being applied round the whole. When the pedicle is very short and broad, the application of the ligature as above is not easy, and more especially when there are adhesions round the pedicle. Wire of silver or iron has also been used in the same way, the wire being stout or small according to the thickness of the pedicle.

Two methods have been employed in dealing with the pedicle after the ligature (thread or metal) has been applied. The older method, *a*, was to bring out the ends of the ligature at the margin of the wound and there leave them until the process of separation enabled the whole to be removed after some days had elapsed. Pus thus formed and escaped by the side of the ligature, and the patient was subjected to the effects of an open wound of the peritoneal cavity during that period. Some operators introduced a modification in the procedure, *b*: the ends of the ligature being cut off close, the stump dropped into the abdomen and the outer wound absolutely closed. Dr. Tyler Smith and Dr. Marion Sims, the former using cord, the latter wire, have followed this practice; others have occasionally adopted it. Dr. Marion Sims states that the superficial parts of the pedicle cut through by the wire unite together subsequently, thus embedding the wire within it. When ordinary ligature cord is used the result varies: in some cases irritation follows around the seat of the ligature, in other cases no untoward effect is observed.

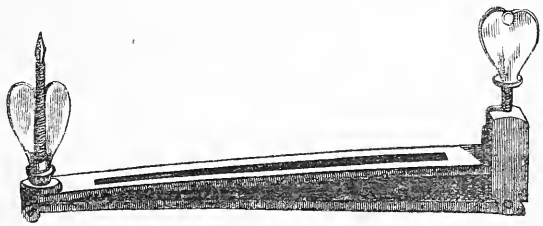
The Clamp.—Mr. Jonathan Hutchinson introduced the use of a clamp (see Fig. 129), by which the pedicle is constricted, brought out to the level of the abdominal wound, and there maintained in a fixed position, the wound being then closed around the stump

of the pedicle. The double object of preventing hæmorrhage and keeping the stump of the pedicle at the surface of the wound is thus secured.

Mr. Spencer Wells's clamp is composed of two slightly curved blades meeting somewhat like scissors, and acting in such a way that the pedicle, if broad, is compressed into a rounded shape and its bulk thus reduced. This clamp and another one which had been previously largely used, and of which it is a modification, is provided with long handles enabling the operator to use great compressing force. The handles are capable of removal when the pedicle has been secured.

A later instrument combining the advantages of the ligature and the clamp which I have myself introduced under the name of the 'buckle-clamp' will be further described presently.

Fig. 129.



The *Écraseur* has been little used as a means of severing the pedicle. The varying size of the vessels cut through renders it necessarily uncertain as regards the prevention of secondary hæmorrhage, an uncertainty which is under these circumstances of great moment.

Application of the Actual Cautery.—To Mr. John Clay, of Birmingham, is due the merit of first applying the actual cautery in cases of ovariotomy, but he used it for the purpose of destroying adhesions only. Mr. Baker Brown first employed it for cutting and closing the pedicle. In this procedure the pedicle is enclosed between the two blades of a clamp of peculiar shape, these are then screwed very tightly together, and a wedge-shaped cautery iron at a moderate red heat applied so as to cut through the pedicle. The parts are cut through slowly and deliberately, the clamp is then unscrewed, and the stump allowed to drop into the pelvis. In a few cases the vessels are not completely closed, and after taking off the clamp it is found that there is some escape, necessitating the application of liga-

tures. The cautery-clamp has a twofold action; it compresses and crushes the pedicle for a thickness of a quarter or a third of an inch, and it sears the surface. And it must be employed in such a manner that these objects are well attained. One thing at least is evident, that care must be exercised in inspecting the stump after unscrewing the clamp. If the blood-vessels are large, a ligature may be also necessary.

Acupressure.—This ingenious invention of Sir J. Y. Simpson has not yet been much used in ovariotomy as a means of securing the pedicle. Dr. Aveling has recorded a case in which the pedicle was secured by a contrivance of a peculiar and somewhat analogous kind. The pedicle was tied by two separate pieces of ligature, these were then brought out through a tube composed of a coil of wire, which he terms a coil clamp, and secured to the extremity of the tube. At the end of forty-eight hours the ligatures were withdrawn.*

Of the various methods of treatment of the pedicle, viz. by the actual cautery, the ligature, the ligature dropped in, and the clamp, the clamp has been employed in the larger number of cases. The actual cautery method has been employed in a good many cases; and the ligature dropped in has been employed in a smaller number. The success which has attended each and every of these methods does not point out either of them as eminently the best. The older method of ligature alone brought out at the wound has not been employed of late, nor is it very likely that it will be.

I have given some attention to this very important question of the method of treating the pedicle, and now offer the results of considerations on the subject, together with a new instrument designed to carry out indications which seem to be very important.

It is obvious enough that all risk of hæmorrhage must be avoided. Hence it is absolutely necessary either that the pedicle be very firmly tied or that it be very accurately compressed. The vessels in the stump are often of great size, the pedicle is not seldom very short, and thus in a case which seems a good one for the cautery on account of the shortness of the pedicle the risk of secondary hæmorrhage is not a light one to incur. But for this liability the actual cautery would seem to be the best method in a case of very short pedicle, for in a case of long pedicle the clamp method seems unobjectionable in every way.

It is to be recollected that we have to regard not simply the

* *Obst. Trans.* vol. vii. p. 229.

dealing with the pedicle at the moment of the operation, when the prevention of hæmorrhage is the principal indication, but we have to provide for the various events which follow in the course of the few days next ensuing. With the cautery plan, we have no further thought beyond that of the dread of hæmorrhage, for the peritoneum is completely closed; and if the operation itself does not kill the patient, no secondary source of danger such as is liable to be set in action by the presence of a wound partially connected with the peritoneal cavity exists. This secondary source of danger is in a degree inseparable from the clamp method as hitherto practised. When the clamp is employed, the pedicle is exposed in the wound; and the first thing which we hope to secure is union by means of adhesive lymph between the pedicle and the margins of the wound with which it is in contact. Upon this union depends the safety of the patient, for it is evident that until it has occurred the septic products of decomposition may pass from the surface of the wound into the peritoneal cavity by the side of the pedicle. The possibility of this communication is, it is true, sometimes an advantage in the inverse sense, viz. by its allowing of the escape of puriform products *out of* the peritoneal cavity.

The clamp method then presents advantages as follows:—

It allows the escape of septic fluid from the peritoneum;

It offers (unless in cases where the clamp slips) a security against hæmorrhage;

It provides also for the free discharge of septic products resulting from ulcerative changes on the stump of the pedicle itself.

The clamp method presents difficulties:—

When the pedicle is very short, for reasons which are too obvious to mention. Or when the abdomen becoming suddenly tympanitic a day or two after the operation, the tension becomes so great as to interfere with the adhesive process at the edge of the wound between the pedicle and wound margin, or still more unfortunately when the suction process thus set up is the means of drawing into the peritoneum septic matters from without.

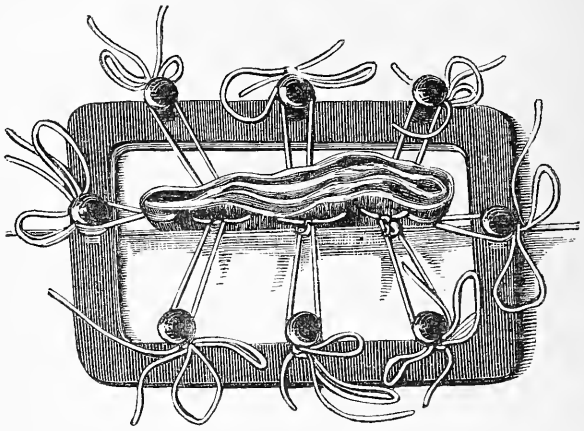
The difficulty of dressing the surface of the wound beneath the clamp itself, and the consequent liability to accumulations beneath it of septic matters, is one to be mentioned in this place.

Impressed with the advantages of the clamp method, the principle of which is to secure the pedicle *outside* the wound, I have been led by experience of the difficulties and drawbacks of the method hitherto practised to devise an instrument calculated to

obviate some of these disadvantages. This instrument I have found to work well, and I therefore proceed to describe it.

The 'Buckle Clamp' consists of a framework of steel, shaped something like a shoe-buckle, measuring $2\frac{1}{2}$ inches by $1\frac{3}{4}$ inches,

Fig. 130.



the piece of steel of which the frame is made being $\frac{2}{3}$ of an inch wide and $\frac{1}{8}$ of an inch thick. The edges are well rounded and smooth. To one side of this framework are immovably fixed studs, eight in number, projecting $\frac{3}{8}$ of an inch from the steel framework. Each of the studs has a deep groove cut in it round which the ligatures are secured. The instrument is used in the following manner:—The pedicle, having been roughly trimmed, is perforated by a stout needle armed with a double strong thread or whip-cord ligature, in two places, or possibly, in the case of a very broad pedicle, in three places. The pedicle is then tied in three or more segments, and the opposite sides are afterwards secured to the upright projections beneath the studs. Finally, a separate ligature embracing the whole pedicle may for additional security be placed beneath the other ligatures, and superfluous portions of the pedicle itself cut away down to a certain level by means of scissors. The drawing exhibits the relation of the framework to the pedicle when the process is completed. It will be observed that the ligatures act precisely as the tongue of the ordinary shoe-buckle, maintaining the pedicle suspended at the surface of the wound. The pedicle can be allowed to sink a little distance into the wound, or it can be maintained quite at

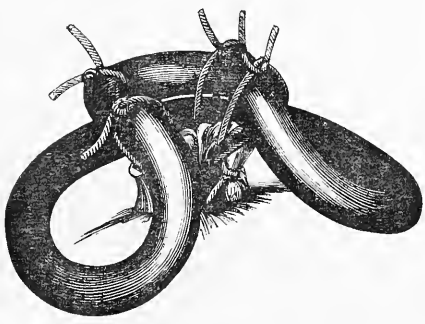
the surface. The steel framework being some distance from the edge of the wound allows the surface enclosed by it to assume, if desirable, a funnel shape, whereby, in cases of very short pedicle, the peculiar advantages of the clamp method are secured without unduly pressing inwards the abdominal walls at the wound.

The other advantages of the 'buckle-clamp' are that the wound is readily dressed, that the stump itself is always, and at every part of it, readily accessible, and that the abdominal walls are not liable to ulceration from the pressure of the edges of the clamp as ordinarily employed. Subsequently it is possible, if thought desirable, to allow the pedicle to sink a little deeper, or to bring it nearer the surface, as may be thought best to conduce to safety, whereas with the ordinary clamp the whole remains immovable until the ulcerative process allows the clamp to fall off. Further, if vomiting set in, the tight pressing inwards of the abdominal wall which the use of the ordinary clamp necessitates when the pedicle is short is more liable to derange seriously the healing process than when the buckle-clamp is employed. (See further remarks on the after-treatment later on.)

Some years since Mr. Erichsen practised a method of securing the pedicle which in principle is the same as that just described. His method was to fix the pedicle at the edges of the wound by twisting the ends of the ligature securing the pedicle round two hare-lip pins, which latter were used to bring the edges of the wound itself together round the pedicle.

Quite recently I have introduced what is I conceive an improve-

Fig. 131.



ment on the buckle-clamp itself. Instead of using a framework of steel, I now use a framework of copper-wire covered with gutta

percha. The apparatus is of the simplest possible kind. Taking a number four ring pessary, it is bent into the shape depicted in the wood-cut, and the ligatures from the pedicle are secured to it in the manner shown. The apparatus answers precisely the same purpose as the steel framework, but it is more readily adjusted and altered to suit the requirements of the particular case. The pedicle is by its means readily kept at any position desired, and subsequently the traction on the pedicle can be increased or diminished at pleasure. Nicely packed round with cotton wool and covered with strapping it perfectly maintains its place. It is very satisfactory in practice, and in future I shall use it exclusively in all cases where the method of bringing the pedicle to the surface is adopted.*

It is not likely that any one method of securing the pedicle will prove universally applicable, and ingenuity may furnish us with still better appliances for the object. For a very short pedicle, where the vessels are small, the actual cautery appears satisfactory, and in some cases the pedicle may be so short that we are driven to adopt either this or the ligature dropped in. Of the two the cautery is less safe than the ligature, in such cases *quoad* the risk of hæmorrhage.

Before closing the wound it is necessary to examine the other ovary and to ascertain whether it be sound. If there be a decided cystic tumour of the other ovary, and of such a character as to render it probable that it would, if left, grow and necessitate a further operation, it should be removed; but it may be questioned whether it is advisable to meddle with it under any other circumstances. The removal of the second ovary would be effected in precisely the same manner as the first, but more easily and expeditiously.

The next step in the operation is the closure of the external wound. But before finally doing so the operator must be sure that all hæmorrhage from adhesions or elsewhere has ceased, and all blood-coagula must be removed. Very clean sponges must be finally used to remove any fluids which may have escaped into the pelvic cavity, and no sponges must be left behind. The edges of the wound are then brought together by hare-lip pins or by simple

* Since writing the foregoing I have seen an interesting paper by Dr. Lloyd Roberts, *On the Various Methods of Treating the Pedicle in Ovariotomy*, in which Dr. Roberts describes several methods of treatment, some of which are not mentioned in the foregoing remarks, but I am gratified in finding that Dr. Roberts is favourably impressed with the instrument described above as the 'buckle clamp.'

sutures, for which purpose strong silk for the deep sutures and wire for the superficial ones are best. All agree in the advisability of passing the sutures through the peritoneal membrane itself, in order that when the edges of the wound are brought together the cut edges of the peritoneum may touch. Union of the peritoneum it is most important to secure, in order that, if suppuration take place outside, the pus may not pass inwards. The deep sutures having been applied, superficial ones are necessary to maintain the apposition of the cut edges of the skin. If the pedicle be brought outside, it is kept at the lower margin of the wound, and there maintained as before described. The wound is then covered up in the manner presently to be described, and a large pad of cotton wool laid over all and a flannel bandage. The patient can then be placed in bed.

The *after-treatment* is a matter of the greatest consequence, for it matters little how well the operation may have been performed if there is allowed the slightest defection in the care administered subsequently. A very little neglect will nullify the most promising hopes.

The patient must be sedulously watched by a specially trustworthy and competent nurse; she must not be allowed to move. The room must be kept moderately warm, and at an *even* temperature, but well ventilated. The catheter must be employed twice or thrice in the twenty-four hours.

Special attention to the wound itself is required. On this point there is some difference in practice, but my experience and observation have led me to form strong predilections in favour of what may be termed the *dry* treatment. Carrying out this idea, in cases where the *whole* wound is closed, the surface should be everywhere carefully dried when the sutures have been adjusted, and cotton wool, both dry and clean, packed upon it. The wound will not then require to be looked at, under ordinary circumstances, for the first three days, when it should be again carefully dried, but not washed, and treated as before.

When the clamp-method is employed, the treatment is more complicated. The parts around the pedicle are carefully dried and packed in with dry cotton wool. This is undisturbed till the next day, or at all events for some hours. Mr. Spencer Wells has introduced a procedure at this stage which appears of the greatest value, and which I have followed also, viz. applying the solid perchloride of iron to the stump of the pedicle on the day following the operation. This rapidly absorbs moisture, and dries up

the exposed pedicle quickly, thus arresting decomposition. At the same time, by means of little pieces of cotton wool, the surface adjacent should be carefully dried, and every particle of moisture removed. Dry cotton wool is packed over all as before, and in such a way that air does not gain access to any part of the wound. Daily, or twice a day, the cotton wool dressing is repeated. On the third day I have generally begun the use of cotton wool soaked in oil, carbolized (one part in eighty) instead of the dry wool, as an application to the wound close to the pedicle. By that time the pedicle has become adherent to the wound edge, and the oil does not soak through into the peritoneum, while its antiseptic action is very valuable from this time forwards.

The absolute exclusion of air from the wound is as nearly as possible effected by careful packing with cotton wool, and I attach the greatest importance to its use.

Rest of the wound should be rigidly enforced, and every precaution taken to secure it. The wound in this severe operation is a peculiar one: it is a source of constant danger to the patient, it is an aperture at which a very deadly poison is waiting to obtain admittance. Should the intestines act violently, should they become distended with gas, there arises at once stretching and opening out of the internal edge of the wound, a suction influence is exercised, and purulent products may rush in. Pyæmia and death are the results of this. How to secure then this rest? The mode of feeding of the patient has a great influence in this particular. If food be given by the mouth, the stomach and intestines are set to work. This is undesirable. Hence the best plan to adopt, and one which has indeed obtained very large approval by successful operators, is to give no food at all by the mouth for three days, or even longer. The patient is sustained by enemata given every four or six hours, in bulk not more than two ounces at once, and composed of beef tea or egg beaten up, and a small quantity of brandy. To these enemata there should be added, night and morning, twenty drops of laudanum. By the mouth the patient should only be allowed fragments of ice, which she will take readily and gratefully. On the fourth or fifth day a little beef tea or soup, in spoonfuls, may be given by the mouth frequently; and if matters are doing well, more solid food may be commenced very shortly according to circumstances. It is in my opinion very hazardous to give solid, or indeed any, food by the mouth for the first three days. The use of the apparatus above described enables us readily to adjust the liga-

tures on the stump, so as to prevent undue dragging on the pedicle.

The bowels should be unloaded by a simple enéma of warm water on the fifth day.

The deep sutures may be left in until the fifth day. The superficial ones to be removed later. Strapping is generally employed as an assistance in producing rest of the abdominal wall from the first. If the heart be weak, a large pad of cotton wool over the epigastric region is a help in cases when the bulk of the tumour removed is large.

It not unfrequently happens that the state of the patient just after the operation is one of great exhaustion; or shortly afterwards vomiting, very difficult to control, may set in. As regards the exhaustion, it is to be overcome by giving a sufficient quantity of brandy and water or brandy and beef tea by the rectum, which, if it appear necessary, may be repeated at frequent intervals subsequently. Ice by the mouth is best for the sickness. Repeated deep inspirations help to get rid of the chloroform or other anæsthetic, and thus tend to allay the vomiting immediately following the operation.

Death after ovariotomy results mainly from shock, from hæmorrhage, or from pyæmia. A weak heart, diseased lungs, or other general ailment may be the main fundamental cause.

We have to avert the tendency to death, whatever that may be. For *shock*, restoratives—ammonia, brandy, champagne, opium, may, one or all of them, be employed. For *hæmorrhage*, which may occur internally and will be recognised by the feebleness and frequency of the pulse together with a progressive faintness, the only efficient remedy is of course to arrest it. It may be necessary to reopen the wound and secure the bleeding vessel if there be good reason for suspecting that bleeding is going on. A troublesome form of hæmorrhage is that which arises from a large surface of torn adhesions. Application of perchloride of iron appears to be the best remedy in some of such cases. A limited area would be best treated by the actual cautery.

For *pyæmia*, which may be used as a general term for peritonitis, for tendency to puriform formations, for tympanitis, and other grave symptoms, we must be constantly on the watch from the first moment. In one or other of its forms it is the most frequent form in which death occurs. The patient is in danger the moment the pulse rises to 120° together with elevation of temperature to 101° or over that, though the degree of danger varies

according to other circumstances. On the whole it may be said that the condition of the pulse and temperature taken together offer the most trustworthy and valuable indications as to the patient's state. Frequently even when things have seemed to be going on well, the elevation of pulse and temperature have induced me to look at the wound, which I should have otherwise postponed. A cause for the elevation in question has always been found in a commencing septic condition of it, which remedied by careful cleansing, but not *washing*, the pulse and temperature have forthwith gone down. This change should be periodically watched for; for if the patient is neglected for twenty-four hours it may be too late to remedy afterwards. When these pyæmic symptoms arise the brandy should be at once increased. An ounce every two hours per rectum may be ordered, and opium every six hours also given. I have no faith whatever in other methods of dealing with such pyæmia than by supporting the patient's strength by frequent doses of alcohol, frequent doses of food, occasional doses of opium, very careful drying of the wound and removal of decomposing products thereof. Mr. Spencer Wells thinks highly, I believe, of leeches for an obvious attack of peritonitis. Possibly some would be in favour of calomel or mercury in some form. I confess a complete distrust of such remedies, the latter especially, for a slight accidental purging will be sufficient, if the patient is weak, to destroy her very speedily. Warmth to the abdomen I prefer to apply by dry hot flannels, objecting to poultices on account of the moisture. If moisture be applied in any shape it should be kept away from the wound. Turpentine stupes might be used in this way.

Obstinate vomiting, concurrent with peritonitis, setting in a few days after the operation, is most dangerous. Ice by the mouth, sometimes hot brandy and water, sometimes champagne, sometimes creosote, are all in their turns useful. The main nourishment must be given per rectum. In tympanitis a long gum elastic tube may help to remove the gas from the descending colon.

When there is a puriform collection, the result of a low form of peritonitis in the pelvis, it would be best to remove it by opening the wound a little or by puncture from the vagina. Purulent depôts in the broad ligaments have been thus treated by Mr. Spencer Wells. Careful digital examination of the vagina will indicate necessity or otherwise for these procedures. Nothing certainly can be so bad for the patient as to have a depôt of

decomposing pus in a pouch in the pelvis. It is preferable to incur a little risk rather than to allow the patient to die from the intense pyæmia which may otherwise quickly result.

Diarrhœa is dangerous: it must be checked by using first a warm water injection to empty the rectum, and then giving by injection laudanum in small frequent doses along with the brandy and water probably also required.

Life frequently hangs on a thread in the few days following ovariotomy, but experience has shown that very apparently hopeless cases recover by careful nursing, assiduous feeding as above directed, and unhesitating administration of champagne or other stimulants in very frequent small doses.

For some days the patient must lie absolutely on the back. Bedsores must be prevented by use of water cushions; the greatest cleanliness, but especially dryness, of the linen and surface of the body, enforced. The dressing of the wound should be always very carefully done, an assistant maintaining a little gentle compression at the edges when the strapping is removed, otherwise suction action is set up, and deleterious agents pass inwards.

Author's Cases of Ovariotomy.

	Initials.	Age	Condition.	Children.	Duration of Disease.	Date of Operation.	Treatment of Pedicle.	Description of Tumour.	Result.	Observations.
I.	Mrs. T.	38	Married.	No child.	1 year.	Operation, Dec. 1865, at University College Hospital.	Actual cautery.	Enormous polycystic tumour with considerable portion of solid colloid material. Adhesions to bladder considerable.	Death on 4th day from peritonitis, due to injury to bladder.	
II.	E. W.	56	Single.	3 children.	6 years. Tapped twice.	Operation, March 18, 1867, in private.	Actual cautery.	Enormous unilocular cyst, apparently of broad ligament.	Recovery.	
III.	A. C.	59	Married.	2 miscarriages.	3 months.	Operation, June 9, 1868, at University College Hospital.	Ligatures dropped into pelvis.	Cystic tumours of both ovaries. Both removed. The larger tumour of very great dimensions, containing much fluid.	Death from peritonitis on 8th day.	
IV.	F. M.	38	Single.		1 year.	Operation, May 21, 1870, in private.	Old form of clamp.	Polycystic tumour of large size. No adhesion.	Recovery.	
V.	Mrs. H.	31	Married.	5 : last 2½ years ago.	Upwards of 1 year. Tapped once.	Operation, July 12, 1870, in private.	Clamp.	One very large cyst, containing about 9 quarts of fluid, and a mass, size of fist, of small cysts. Universal very strong adhesions.	Recovery.	The clamp slipped off the pedicle on the day after the operation. No ill effects.
VI.	Mrs. H.	54	Married.	12 children.	1 year and a-half.	Operation in private, July 13, 1870.	Clamp.	Very enormous polycystic tumour.	Death 24 days after.	Patient recovered enough to move to sofa on 14th day. Took bronchitis, of which she died. Heart very feeble.
VII.	M. A. C.	32	Single.		3 months.	Operation, Nov. 28, 1870, in private.	2 pedicles tied and returned.	Large cyst, with solid tumour in addition. Universal vascular adhesions. Tumour undoubtedly of carcinomatous nature. Great difficulty in arresting hæmorrhage from adhesions.	Death 36 hours after operation.	The patient was *in extremis* at time of operation, exceedingly weak, and legs very œdematous.
VIII.	J. R.	25	Single.	1 child.	3 years.	Operation on Feb. 21, 1871, in private.	New buckle clamp used.	Tumour composed of two cysts, one holding 6 quarts, the other smaller. Very firm adhesions in some places, cut through by actual cautery. Incision only 2 inches.	Recovery.	First time the new 'Buckle' clamp was used. Answered perfectly. Came away on 9th day.

Author's Cases of Ovariotomy.—Continued.

	Initials.	Age	Condition.	Children.	Duration of Disease.	Date of Operation.	Treatment of Pedicle.	Description of Tumour.	Result.	Observations.
IX.	Miss F.	40	Single.		3 years. Tapped twice.	Operation, July 18, 1871, in private.	New buckle clamp.	A preliminary tapping performed 3 days prior to operation of extirpation, and 46 pints of fluid removed. The tumour was found to be composed of a series of fibroid growths, in aggregate size of two fœtal heads, attached by a broad pedicle, as thick as finger, to back of uterus. Secured by new clamp.	Recovery.	The tumour was supposed to be ovarian before operation was begun. This patient was saved only by great care and attention; condition previously one of extreme exhaustion.
X.	Mrs. H.	42	Married.	No child.	2 months.	Operation, Jan. 16, 1872, at the All Saints' Institution.	New clamp.	A very soft, friable, compound cystic tumour, adherent in many places, about size of adult head. Pedicle slightly torn in process of separation.	Recovered apparently from operation, but died April 23, 1872.	On April 9 a second operation was performed, it being considered that the other ovary had become affected. But on opening abdomen the mass was found to be a pelvic cellulitic tumour, the other ovary being, however, affected with cystic disease size of pigeon's egg. The diseased ovary was removed, and the pedicle tied and dropped. A week after the operation the tumour burst into the rectum, and a fortnight after the operation the patient died.
XI.	Miss H.	35	Single.		About 8 months.	Operation, March, 1872, at the All Saints' Institution.	New clamp.	Polycystic tumour size adult head. No adhesions.	Recovery.	
XII.	Mrs. C.	56	Married.		3 or 4 months. Tapped once, as preliminary operation.	Operation, March, 1872, at the All Saints' Institution.	New clamp.	Enormous polycystic colloid tumour. No adhesions.	Recovery.	

Author's Cases of Ovariotomy.—Continued.

	Initials.	Age	Condition.	Children.	Duration of Disease.	Date of Operation.	Treatment of Pedicle.	Description of Tumour.	Result.	Observations.
XIII.	Mrs. E.	70	Married.	Three.	About 1½ year. Tapped 14 days before ovariotomy, and 36 pints of fluid removed.	Operation, May 25, 1872, at the All Saints' Institution.	Gutta-percha frame-work.	Enormous uniocular cyst of left ovary, with very firm and extensive adhesions behind.	Death on May 29.	Very great bleeding from torn adhesions. Patient did perfectly well till end of third day. Then became excited and 'put out,' and died exhausted 12 hours later. Post-mortem showed peritonitis. Patient's apparent good health, apart from the ovarian disease, determined the performance of the operation at this advanced age.
XIV.	Miss H.	22	Single.		About 3 years.	Operation, July 2, 1872, in private.	The two pedicles tied and dropped.	Large uniocular cyst of left ovary. Small cyst, size pigeon's egg, of right ovary.	Recovery.	The pedicles were too short to allow of use of clamp.
XV.	Mrs. B.	52	Married.		Two years.	Operation, July 9, 1872, at All Saints' Institution.	Gutta-percha frame-work.	Very large polycystic tumour.	Recovery.	Diagnosis difficult from great thickness of abdominal wall, which presented nearly 2 inches of fat.

Of Exploratory Operations, not included in the foregoing list, I have performed 5.

1. Case of fibroid tumour of uterus. Recovery.
2. Case of encysted peritonitis. Final result, death.
3. Case of ascites from (as appeared subsequently) malignant disease of liver. Death.
4. Case of fibroid tumour of uterus. Operation professedly exploratory. Recovery.
5. Case of large mesenteric tumour (nature doubtful), with ascites. Professedly exploratory. Recovery.

Palliative Treatment of Ovarian Tumours.—Past experience does not give encouragement for the belief that much benefit is derived in cases of *ovarian dropsy* from any particular remedies. Iodine, bromine, and their compounds, are agents which have been most often exhibited of late years. Iodine has been applied externally also. It has not been shown that any great amount of benefit has been derived from their use, but in the early stage of the affection it would be desirable to give them a trial. It is extremely doubtful whether we have any one drug from which much can be expected; but it does seem reasonable to suppose, and it is in accordance with experience, that by attending to the general health of the patient, enforcing observance of rules as regards diet, exercise, and regimen generally, a favourable influence may be exerted, and possibly the onward progress of the case stayed: the more so if we found, on enquiry, that the general health had been, for some time previous to the appearance of the disease, in a defective state. Whether operative measures be adopted ultimately or not, we should in the meanwhile enquire minutely into the particulars of the life of the patient, her habits, food, &c. Such remedies should be administered as will assist in restoring the impaired health. Iron, quinine, or other suitable tonics, will frequently be required. The condition of the bowels must be regulated, and mild laxatives administered if necessary; injections are often required in cases where there is a pelvic ovarian tumour present, the tumour sometimes pressing on the rectum and preventing defæcation. In cases where the disease is far advanced, where operative measures are, from whatever cause, inadmissible, the palliative treatment must be adapted to the circumstances of the case. The great difficulty is generally to carry on the digestive process, there being often great irritability of the stomach and inability to take food. The food administered must be of the most nutritious and easily digestible kind.

The Operation of Tapping.—This is a palliative measure. In a very few cases it has proved curative. It is adapted for cases where the tumour is composed of a simple large cyst filled with fluid. It is sometimes necessary as a preliminary procedure to ovariotomy, either to render the diagnosis more certain, or to relieve the extreme dyspnœa and embarrassment of the circulation present, and thus to place the patient in a better state for the more severe operation. Tapping is not altogether devoid of risk. In about 15 per cent. of the cases, possibly 10 per cent. only, a fatal result follows the tapping.

The advantages of tapping are that it affords a ready method of giving, at all events, a temporary relief to the patient, and the (very remote) possibility of cure when the cyst is single.

The disadvantages are the following: The immediate risk of death—a risk which it is impossible to foresee and impossible wholly to guard against, and which is not apparently associated with any one particular condition of the cyst or cysts; and the fact that as a rule the fluid rapidly accumulates, and the fatal event is apparently, in some cases, somewhat hastened thereby.

In some cases patients are tapped, and no refilling of the cyst takes place for some time, for months or for even longer—to a distressing extent at least; but as a rule the cyst refills with rapidity, and to relieve the patient tappings are necessary again and again, the interval becoming progressively shorter and shorter after each operation.

A further disadvantage of tapping is, that, by setting up adhesions, any subsequent attempt to perform ovariotomy is rendered more difficult; and it will be seen, on analysing Mr. Clay's statistics, that a case of ovarian disease, of which 'repeated previous tapping' forms an element in the history, is less likely to prove a favourable case for ovariotomy. Mr. Spencer Wells' statistics, adduced in a paper read at the Royal Medical and Chirurgical Society, in April 1869, do not however bear out this view, at least to any weighty extent, for the percentage of mortality of ovariotomy after repeated tapping, compared with that of ovariotomy without tapping, was only 1 per cent. greater in the former than in the latter case.

It seems probable that the greater danger of a first operation of tapping, as compared with second or subsequent ones, depends on the fact that adhesions are not usually present at the time of the first operation; and consequently the peritoneum itself is subjected to influences in cases of first operation which are, or may

be, inoperative subsequently. The escape of fluids from ovarian cysts into the peritoneal cavity is attended often with no apparent prejudicial effect whatever, but occasionally it is not so, and peritonitis of fatal character may be thus set up. The danger connected with tapping does not depend on this circumstance alone; another cause of death is hæmorrhage from puncture of a large vessel in the abdominal parietes; another is hæmorrhage into the ovarian cyst itself from puncture of a vessel belonging to the cyst. These are accidents all more or less unavoidable and difficult to guard against with absolute certainty. Another cause of death after tapping is the severe inflammation sometimes set up within the cyst by the operation.

The operation of tapping is usually performed through the abdominal parietes, when the object is palliative. The operation of tapping from the vagina is generally performed with other views, to be spoken of presently. In some cases ovarian cysts have been evacuated by tapping from the rectum.

Tapping was for a long time the only operation attempted in cases of ovarian dropsy. In some cases tapping is impossible, as when the tumour consists of many cysts, or when it is wholly solid: these cases do not require to be discussed. If the distension of the abdomen for which the relief is necessary has been slowly advancing, there appears no reason why tapping should be postponed; but if it be recent, it is advisable to wait longer before operating—that is to say, when the cyst is single, and no indication for ovariotomy is present.

In some instances the result of examination is, that we find it difficult to say whether the whole of the tumour be due to the presence of a single large cyst or not: here the presence of *other* cysts in a state of growth at the base of the tumour would determine us on advising ovariotomy in preference to tapping. In such cases it may be deemed better to pursue the following course: to tap the cyst and ascertain, in the manner previously pointed out, whether such secondary cysts be present or not, and, in the event of such being found, to proceed at once with the more radical operation of ovariotomy.

After all, in the majority of cases the decision will probably more and more incline in favour of ovariotomy rather than tapping, the risk of the radical operation being so little in excess of that of a measure which is only palliative.

Mode of performing the Operation of Tapping.—The readiest, and, on the whole, the safest, method of performing the simple

operation of tapping is to place the patient on the back, and to allow the fluid to escape through a flexible tube into a vessel placed by the side of the bed or couch. The best situation at which to make the perforation in the abdominal walls is the median line; there being thus less risk of wounding vessels. It is best to make a small incision in the skin first, in order to allow the trochar more easily to pass through the abdominal wall. A large canula and trochar are best, and if the canula have attached to it, as in Mr. Spencer Wells' instrument, a long india-rubber tube, the contents of the cyst escape on withdrawal of the trochar. It is hardly necessary to observe that the bladder should be very carefully emptied by the catheter before proceeding to the operation. If during the operation the canula become choked up, a long probe should be used to remove the obstruction. During the escape of the fluid gentle pressure may be exercised on the abdomen. After completion of the operation a wide flannel bandage should be carefully applied, the wound being previously covered over by a piece of lint folded in the form of a compress. Should fainting occur during the operation, brandy or other stimulants must be given, and the cyst evacuated more slowly. Quiet after the operation is very essential, and the body should be kept as nearly as possible immovable for at least twenty-four hours after the operation, the catheter being used to evacuate the bladder.

The cyst inflammation liable to arise after tapping is accompanied with great pain, great tendency to nausea, or actual vomiting, and general symptoms of peritonitis. Warm poultices, iced drinks to allay the vomiting, are the best remedies in such cases. Small quantities of stimulants—brandy or champagne—very frequently administered, are more likely to sustain the patient in resisting the 'pyæmic' tendency of the affection than mercury and depletion. If the symptom assume a severe form, the operation of ovariotomy should be performed forthwith.

Tapping followed by Pressure.—This is a method of treating cases which at the present day it seems useless to discuss.

Tapping followed by Iodine Injection.—This method of treatment consists in first tapping and evacuating the cyst, and then throwing into its cavity a fluid consisting of equal parts of tincture or watery solution of iodine, to which a little iodide of potassium is added, and water. This fluid is left in for a few minutes, the cyst being slightly kneaded from without, and it is

then usually allowed to escape by the tube through which it was injected. The effect of this procedure, when attended with success, is to excite inflammation of the interior of the cyst, or so to alter the condition of the interior that there is no further accumulation of fluid.

This operation is only adapted for cases where there is but one cyst, or possibly two large ones, and where there is no other disease of the ovary. In cases where the cysts are numerous, it is quite inapplicable; very little benefit could be expected from it in cases where further cyst development is in progress. The operation has now scarcely any advocates since the radical cure by ovariotomy has come to be so largely practised.

The drawbacks to the operation are, the uncertainty that it will cure, and the necessity, in many cases, for repetition of the operation, two, three, or more times, before a cure can be obtained.

Tapping from the Vagina.—This is a method of treatment of ovarian cysts which has been practised in a certain number of cases with advantage in Germany, first by Kiwisch, then by Scanzoni, and in a few cases in this country by Dr. West. It consists in tapping the cyst through the vagina, maintaining the opening thus made in a fistulous state, and obliterating the cyst by the inflammatory process set up. It is applicable chiefly to moderately large simple cysts, not exceeding the size of a large pregnant uterus. The opening made into the cyst is the size of the finger; a tube is left in this opening for several weeks, and warm water is daily injected through the tube. The operation is necessarily difficult when the ovarian cyst does not project well into the vagina, or when the vagina itself is narrow.

The results claimed for the operation by Kiwisch are of the best kind, viz. the radical cure. Scanzoni, following Kiwisch's steps, has operated in this manner 14 times, and, as he asserts, 8 of the cases were completely cured. The results obtained by Dr. West in 3 cases were encouraging.

As a simply palliative operation, tapping from the vagina is less generally applicable than tapping from the abdomen, from the fact that the tumour is more often abdominal than pelvic. The number of cases in which it is likely to prove a radical cure is by no means considerable.

Analogous to the operation just described is the *puncture of*

the cyst from the rectum, a mode of procedure which requires no particular comment.

There are some other surgical procedures which have been advocated and practised at various times, but which have not been found very successful; generally for very obvious reasons; and the great success of the radical operation of ovariotomy really renders the consideration of such minor tentative procedures in a great degree superfluous.

CHAPTER XXX.

DISEASES OF THE PERINEUM AND VULVA.

EXAMINATION OF THE EXTERNAL GENERATIVE ORGANS.—Diagnosis of Ulcerations of the Vulva of various Kinds—Adhesions of Labia; Treatment—Elephantiasis of Vulva—Hypertrophy of Labia and Nymphæ—Anasarca of Labia or Nymphæ—Hypertrophy of the Clitoris—Condylomata, Warty Excrescences of the Vulva; Removal—Lupus of the Vulva—Cancer of External Generative Organs; Treatment—Abscess of Labia and Boils—Blood-Tumour of the Vulva—Fibrous, Fatty, and Encysted Tumours of the Vulva; Treatment—Hernia of the Labia and Ovary—Various Forms of Inflammation of the Vulva; Treatment—Vulvitis in Children—Pruritus of the Vulva—Treatment.

Method of Examination.—Concerning the method of examination of the vulva, orifice of the urethra, &c., there is little to be said. For ordinary purposes the position on the side answers very well; in others, the position on the back is best. Concerning the diagnosis of the various affections of the organs here situated there is the less room to enlarge, inasmuch as these organs admit of being accurately and closely inspected.

Diagnosis of Ulcerations of the External Genitals.

In reference to the diagnosis between ulcerations of syphilitic, cancerous, lupoid, or other nature, it may be remarked, *in limine*, that it is safer in doubtful cases to depend rather on the deductions to be drawn from attentive consideration of the history and general symptoms of the patient, than on the appearances presented by the ulcerated surface itself, these appearances, *per se*, being likely to lead to the formation of erroneous conclusions.

Ulcerations due to *syphilis* are distinguished from those due to *lupus* by the following characters. In the case of syphilis, although the ulcers may be like those of lupus superficially, there is an absence of induration of the cellular tissue beneath. The coppery hue of syphilis is wanting in lupus. The history and course of the two affections, the absence of syphilitic affections in other parts of the body, in cases where the disease of the vulva has

lasted for some time at least, would be against syphilis. Syphilitic ulcers have a predilection for the internal or mucous surface of the vulva, and especially the labia minora. In the case of lupus of more severe form, where there is considerable destruction of the tissues of the part, there might be a possibility of confounding it with the phagedænic form of syphilis. Here the distinction would rest on the rapid course of the syphilitic, the chronic course of the lupoid, disease; added to which the previous history of the case would throw much light on the subject.

Ulcerations due to *cancerous* disease of the vulva have the characters ordinarily possessed by cancerous ulcers elsewhere. The hard, jagged, everted borders, the considerable hardening of the tissue beneath, greater than in the case of lupus, the occasional bleeding, lancinating pain, and progressive character of the disease—these are the chief distinctive features. There is less disturbance constitutionally in the case of cancer of the vulva than in cancer of other parts, inasmuch as cancer of the vulva is usually of the epithelial variety. Syphilitic ulceration, as a rule, could hardly be confounded with cancerous; the course of the affections is essentially different; the cancerous disease is limited to one spot, and there is, as in the case of lupus, absence of syphilitic disease in other parts of the body. The diagnosis of syphilitic ulcer is not always so easy. Dr. West has observed some cases of chronic ulceration of the mucous surface of the vulva, which he believes to have been forms of tertiary syphilis, but which proved so difficult to cure as to raise the question as to their malignant nature.* The ulcers in question were on the mucous surface of the vulva, for which they exhibited a preference. From epithelial cancer, and from rodent ulcer or lupus, these ulcers require to be distinguished. In lupus, there is more induration around and in the base of the ulcer, and the orifice is often contracted; whereas, in Dr. West's cases of supposed syphilitic origin, these characters were wanting.

Simple ulcerations are usually distinguished from syphilitic ones by the absence of inflammation around the ulcers in the syphilitic cases.

Twice I have observed a patch of ulceration, the size of a shilling, on the surface of the labia, in a young woman the subject of scrofula. This form of ulceration might be termed *scrofulous ulcer of the labium*. The edges were pretty well defined,

* *On Diseases of Women*, p. 651.

there was little inflammation around, and not much pain. On both occasions the ulcer appeared simultaneously with great constitutional disturbance, and disappeared when, after removal to the country, the patient had become in other respects better.

ADHESION OF THE LABIA MAJORA.

The labia majora are sometimes found adherent in the middle line, there being only a small opening above—the urethral orifice. Cases of this kind are chiefly met with in infants or young children.

Such adhesion is sometimes met with, but in a partial degree only, after adult age has been reached. The closure here alluded to is very different from that situated higher up within the vagina, where the hymen is in question; in the latter case, the obstructive membrane is not visible until the labia have been separated. Here the labial obstruction is quite on the surface, the perineal raphé extending forwards much further than usual, and all that is seen of the vagina is a little recess just beneath the urethral aperture.

The *treatment* required is as follows: The ivory handle of a scalpel is dipped in oil, the extremity of the handle inserted just below the urethral orifice, and the separation effected by pressing the edge of the handle outwards against the obstruction, which usually readily gives way. A piece of oiled lint may be introduced between the separated labia, and there left for a day or two. This operation should be performed during the first year of life. Incision may possibly be necessary in those rare instances in which the agglutination persists until after puberty.

ELEPHANTIASIS OF THE VULVA

is a peculiar hypertrophy of the skin of the part. The disease is very rare; the size of the tumour thus formed may be very considerable, as in the case depicted in the French edition of Scanzoni's work on 'Diseases of Women,' where the labia, enormously increased in size, extended down as far as the knees. The disease is said to be epidemic in Barbadoes. It is not often witnessed in temperate zones. (Scanzoni.)

HYPERTROPHY OF THE LABIA AND NYMPHÆ

is not so rarely witnessed. The increase in size is generally due, when the labia majora are affected, to the presence of large quantities of fat. Whether due to fat or to fibro-cellular tissue, the enlargement is smooth and uniform, thus differing from elephantiasis and from other forms of enlargement of the labia. The hypertrophy may affect the labia majora or the labia minora exclusively. A remarkable case of hypertrophy of the nymphæ has been described by Breslau, in which the presence of the tumour and the dragging of the enlarged organs on the lips of the urethral orifice produced incontinence of urine.

In a few cases, when the bulk of the organ interferes with locomotion, or gives rise to other discomforts, the hypertrophied parts have to be excised.

ANASARCA OF THE LABIA MAJORA OR NYMPHÆ.

In these cases there is an effusion of fluid into the cellular tissue of the labia majora, or nymphæ, or both, and it usually affects both sides; the distension is uniform, not painful; it is consequent on obstruction to the abdominal circulation, as in the course of pregnancy, general organic disease of the heart, liver, kidneys, &c.

The distinguishing characteristics of the swelling due to this cause are that the swelling is uniform, smooth, pitting on pressure, and painless, at all events at first. Subsequently there is often much pain, due to excoriation of the surface.

The *treatment* consists in observance of rest in the horizontal position, and emollient applications, such as poppy fomentations, or an evaporating lotion, composed of a mixture of spirit and water. Such applications afford great relief, and are usually sufficient. When the swelling is extreme, troublesome excoriations, produced by the opposed surfaces rubbing one against the other, may be witnessed. In such cases, lint dipped in the lotion must be applied between the parts affected, so as to prevent friction.

HYPERTROPHY OF THE CLITORIS

is now and then met with as a consequence of eczema of the skin in the neighbourhood, or of a chronic inflammatory condition of the surrounding parts, or of syphilis, or without evident cause. It

is occasionally congenital. The clitoris is also liable to become the seat of cancerous growth.

Cases are on record in which the clitoris has attained an enormous size, so much so as to render walking and moving about inconvenient. The identity of the tumour with the clitoris will be ascertained by carefully examining its attachment superiorly.*

In cases of self-abuse the clitoris may become, but not necessarily so, hardened and hypertrophied.

Treatment.—When the clitoris is hypertrophied, its removal may be necessary, on account of the mechanical inconveniences the presence of a large tumour in this situation produces.

The removal of the clitoris for the purpose of curing epilepsy is an operation which has met with little favour. The evidence which has been hitherto adduced has failed to satisfy the profession that the operation succeeds in its object.

CONDYLOMATA, WARTY EXCRESCENCES, ETC.

Various forms of excrescences of the external generative organs are noticed. *Condylomata* are warty growths, often of considerable size—flat, smooth elevations, growing irregularly round the orifice of the vulva, and occasionally in such profusion as to almost block up the entrance. They are observed in cases of syphilis of the female generative organs. There is generally in such cases a profuse offensive discharge; and, on enquiry, the syphilitic source of the growths in question is made evident. Warts of non-syphilitic character, and resembling those seen in other parts of the body, may be found growing on some part of the vulvar surface. The diagnosis of the syphilitic from the non-syphilitic cases is not usually a matter of any difficulty. The further consideration of this subject falls scarcely within the province of this work.

Treatment.—Where the condylomata are large and numerous, the preferable treatment is to use the knife for their removal, the patient being previously placed under the influence of chloroform. Strong nitric acid or lunar caustic may be used in other cases. The black wash, or a strong solution of iodide of potassium, should be subsequently applied freely; anti-syphilitic remedies are to be given internally. The smaller warts may be dealt with by scissors.

* Several cases of enlargement of the clitoris will be found described in Dr. Churchill's valuable treatise on *Diseases of Women*.

LUPUS OF THE VULVA.

The chief characteristics of this disease—not a very common one—are, thinning of the skin, hypertrophy and knotty condition of the cellular tissue beneath, formation of indurations and enlargements, ulcerations and contractions. The disease is chronic, and is not usually painful. The ulcers form slowly, and the surface heals in one place while it is ulcerating in another. The contractions left on healing of the ulcers are very considerable. The disease differs from cancer, but exhibits a very close resemblance to lupus of the face. It may prove fatal by exhaustion, or by peritonitis consequent on formation of fistulæ. The disease was first accurately described by Huguier, who divides the cases of this disease into three categories—the superficial, the perforating, and the hypertrophic forms.* Dr. West, whose description of lupus is most complete, has himself observed five cases.†

The disease was observed in only one of these cases before the age of twenty; it was observed most frequently between the ages of twenty and thirty-five. Its duration may be gathered from Dr. West's statement, that in the 14 cases observed by Huguier and himself, some cases admitted of a cure after more than three years, and of great relief even after eight years. One case had lasted between ten and eleven years. The disease kills, when fatal, by producing peritonitis, fistulæ, contraction of the bowel, and not, as cancer does, by attacking some distant organ, or by involving all the tissues in one common morbid change. (West.) Two cases of this rare affection are recorded and delineated in Dr. M'Clintock's work.

Treatment.—It appears that complete recovery from lupus of the vulva is rare, though the disease is susceptible of much alleviation by treatment. Long courses of small doses of mercury and iodide of potassium would seem, from Dr. West's experience, to be most efficacious. Scanzoni recommends the local and internal use of iodine. Huguier and West both insist on the extreme advisability of removing the nymphæ or any of the adjacent parts readily admitting of extirpation, when the ulcerations upon them appear indisposed to heal. Dr. West also urges the removal of the excrescence apt to form in such cases as

* Huguier's important memoir will be found in the *Mémoires de l'Acad. de Méd.*, 1849.

† *Op. cit.* p. 653.

preparatory to other measures; and he considers the actual cautery preferable to any kind of chemical escharotic, as a means of healing the ulcerations produced by the disease. Professor E. Martin* of Berlin records a case in which he applied fuming nitric acid to the affected parts, the patient being under the influence of chloroform, and subsequently a milder caustic, in the shape of nitrate of silver. The case, that of a patient æt. 25, terminated satisfactorily. The destruction of the surface affected by means of potassa fusa, as successfully practised by Professor Humphry in cases of lupus of the face, would appear to be a means of treatment likely to be applicable in cases of this rare disease.

CANCER OF THE EXTERNAL GENERATIVE ORGANS

usually occurs in the form of epithelial cancer, scirrhus and the medullary form of the disease being much more rare. Any part of the external generative organs may be the starting-point of the affection—the clitoris, the labia, are more commonly first affected. In its first stage, epithelial cancer exhibits itself as a 'little hard tubercle on the outer surface, but near the edge, of the labium.' (West.) The tubercle in question is not usually painful, but gives rise to itching and smarting. The diagnosis of the indurations due to commencing cancer of the labia is often a little obscure at first. In a case which fell under my notice, the occasional presence of a peculiar sharp pain darting across the groin led me to suspect cancer; the result proved this suspicion to be well founded. After some months' duration the surface becomes ulcerated, and the ulceration then spreads. The edges of cancerous ulcers are indurated, and this induration is perhaps the most distinctive feature of the ulcer; there is occasionally a bloody discharge; subsequently the inguinal glands swell, and the patient's constitution becomes affected in the characteristic manner. The disease may begin in the groin, as in a case of Dr. M'Clintock's, and travel to the generative organs.

Mr. Jonathan Hutchinson has collected the particulars of 14 cases of epithelial cancer of the female genitals.† The labium was the part affected, the disease affecting the clitoris and nymphæ also in one or two of the cases. The longest time the disease had existed was five years. The disease is stated to have returned

* *Mon. f. Geb.*, Nov. 1861, p. 348.
† *Med. Times and Gaz.*, Oct. 1860, p. 379.

after operation in three of the cases. Operation is said to have been finally followed by recovery in the other cases, save one, where the result is not given.

Treatment.—When, as is ordinarily the case, the disease belongs to the epithelial variety, early excision should be practised, the position and relations of the tumour being such as to render the removal practicable. When the disease has so far advanced that deep ulcerations are present, such operations are not admissible. Applications, such as bromine in solution, are then more suitable.

Abscess of the Labia; Boils.

Abscess of the vulva is characterised by the presence of a rounded circumscribed swelling, of variable size, on one side only, usually on the inner aspect of the labium, and which is painful and very tender to the touch. It may be produced by blows or injury of any kind, by excess in coitus, by scratching, as in cases of pruritus, by masturbation, &c. The most frequent *seat* of the affection is the gland situated on either side, known as the vulvo-vaginal or Duvernoy's gland. This gland becomes inflamed, or the orifice of the duct of the gland becomes obstructed, and the abscess is thus produced. Most cases of circumscribed abscess of the labia originate in the gland in question. Abscess of the vulva of a more diffuse form may be observed as the result of puerperal affections, or it may occur in connection with œdema during pregnancy, or under other circumstances.

Boils are liable to form in the labia as well as other parts of the body. They occasion much irritation, and inconveniences of various kinds. When one boil is in process of healing, another often forms, and the affection may thus last a considerable time.

Treatment.—The ordinary circumscribed abscess of the labium which arises out of inflammation, or obstruction of the duct of the gland here situated, is best treated by early incision. After the opening has been made into it (which should never be done until the question of the swelling being possibly due to a hernia has been considered and dismissed), warm poultices should be applied, and perfect rest enjoined; opiates are necessary to relieve the pain.

Boils are often tiresome and troublesome to manage. Gre cleanliness is essential, and generally tonic medicines are requisite. The solid nitrate of silver has been found a good application.

BLOOD-TUMOUR OF THE VULVA.

This is not by any means a common affection. The tumour, composed of blood effused into the tissue of the part, and doubtless derived from the vessels of the erectile structure described as the bulb of the vestibule by Kobelt, is generally confined to one side. The tumour may be of considerable size; it is painless, unless when the effusion is considerable and the surface inflamed. Women are most liable to this 'thrombus' of the vulva, as it is termed, during pregnancy, and the swelling has been sometimes so great as to impede delivery. After parturition, also, effusions are frequently found to have taken place into the cellular tissue in this situation. It sometimes happens that the tumour or the enlarged veins near it burst externally, and serious hæmorrhage results.

Dr. M'Clintock * describes the affection under the term 'Pudendal hæmatocele.' This author, who has placed on record some most interesting cases of this affection, believes that a varicose state of the vessels of the vagina or vulva is not, as usually supposed, a precursor of the rupture which permits the effusion of blood; for out of 38 cases, tabulated for him by Dr. Halahan, there were only 2 in which such varicose condition of the veins was noted as being present. The affection was observed in primiparæ in 13 out of 25 cases where the number of the pregnancy was noted. Dr. M'Clintock has never observed a case of thrombus of the vulva in the non-gravid state, except as a result of direct violence; and even during pregnancy its spontaneous occurrence is very rare, the more usual cause of the affection being a traumatic one. Mauriceau mentions a case in which a blood tumour in the left labium had existed for twenty-five years, and which, on being opened, gave issue to a matter like the contents of an aneurismal sac.† This was, however, a very exceptional case; ordinarily, the thrombus of the vulva is a recent affection, of rather sudden formation, and in the majority of cases it is an accident attendant on labour.

Treatment.—These tumours are best treated by rest, and the continued use of an evaporating lotion. They are not to be meddled with surgically, unless the coagulum—which is rare—undergoes liquefaction, and a sort of abscess results; in which case puncture may be required.

* *Clinical Memoirs on Diseases of Women.* Dublin, 1863.

† *Mal. des Femmes*, tom. ii. p. 29.

The hæmorrhage which is liable to occur from bursting of these tumours is to be treated by very careful and continuous application of pressure combined with cold: it has occasionally proved fatal.

FIBROUS TUMOURS OF THE VULVA; FATTY AND FIBRO-CELLULAR GROWTHS; ENCYSTED TUMOURS.

Fibrous growths are not very frequently met with in the external genitals. They are characterised by slow formation, are painless and circumscribed; they may become pendulous, attached by a long pedicle. There is a peculiar form of fibrous tumour—the *recurrent*—of which an interesting instance is recorded by G. Simon.* In this case, after repeated removals, the disease always returned, and finally proved fatal. To the ordinary forms of fibrous tumour there attaches no such tendency to reappear.

Fatty and Fibro-cellular Tumours of the Vulva.—Dr. Churchill† relates cases in which tumours answering this description have been present. Sir Henry Thompson has related an instance in which a firm lobulated tumour, weighing when removed nearly four pounds, grew from the external generative organs, hanging down to within two inches of the knees. Its surface was fissured and nodulated, and it was made up of hypertrophied cellular tissue, with fat in the interstices. It had been growing for nine years. The patient's age was 46. The tumour was chiefly inconvenient from its size.‡

The *encysted tumour* of the vulva is rare. It grows to the size of an egg or less, and is found just within the vulvular aperture on one side. I have seen two instances of it.

Capelle records the case of a woman, æt. 30, who had an enormous enlargement, termed by him a *lipomatous tumour*, the size of the head of an adult, originating in the right labium and extending as far as the knee. It was removed by the knife.§ The growth of the tumour dated from ten years previously.

Oozing Tumour of Labia.—A solid œdematous condition of the labia, with great secretion from the muciparous follicles, is sometimes met with. It is generally confined to one side; the enlarge-

* Schmidt's *Jahrb.* vol. cv. p. 63.
† *On the Diseases of Women*, 4th edit.
‡ *Trans. of the Patholog. Soc.* vol. vi. p. 269.
§ *Journ. de Méd. de Bruxelles*, Jan. 1860, p. 41.

ment is smooth, but firm; the surface is somewhat lobulated; and there is a profuse watery secretion. This condition was first described by Sir C. M. Clarke.

TREATMENT OF TUMOURS OF THE LABIA.

The various forms of tumour of the labia are usually only to be treated by one method, viz. excision. The risk attendant on this operation is not usually considerable, but when the tumour is very large, or attached by a broad base, the hæmorrhage may be difficult to restrain, and it may be necessary to secure the vessels one by one as the operation is being performed; in some cases, it is advisable to transfix the pedicle thrice or more, in order to secure control over the hæmorrhage preparatory to commencing the incision.

The *encysted tumour of the vulva* is best treated by dissecting it completely out; if preferred, it may be simply punctured, but the cyst is then liable to refill.

In cases of oozing tumour of the labia, extirpation of the labium has been performed. Our present knowledge of the disease is somewhat vague and unsatisfactory; few opportunities are afforded for observing it, or for ascertaining whether it be a peculiar disease, or a modified form of the affection known as eczema of the vulva. Dr. Churchill recommends great attention to the state of the general health in such cases, and administration of a good generous diet. Rest, the use of astringent applications, as starch, decoctions of oak bark, or lotions, constitute the palliative treatment.

HERNIA OF THE LABIA.

An enlargement situated at the upper part of the labia on one side may be due to a hernia in this position. The hernia follows in such case the course of the round ligament. It is characterised by the position, which is in the course of the ligament in question, by its painlessness (unless inflamed), by the impulse communicated on coughing.

HERNIA OF THE OVARY.

In some very rare cases, a tumour is observed at the upper part of the labium on one side (in the celebrated case related by Mr. Pott, on both sides), and constituted by the ovary, a pouch of the peritoneum in such cases being prolonged into the situation in

question. Dr. Meadows has recorded a very interesting case,* in which there appears to have been primarily an ordinary irreducible inguinal hernia, but secondarily an ovarian hernia. The tumour in this case gave rise to so much inconvenience that it was removed by a surgical operation.

VARIOUS FORMS OF INFLAMMATION OF THE VULVA.

Vulvitis.—Acute inflammation of the vulva may be produced by blows, by undue exertion in walking, by intemperate sexual intercourse, by masturbation, by gonorrhœal infection, by syphilis; and it may occur in conjunction with affections of the vulva or vagina of a chronic character, such as lupus, follicular inflammation, cancer, &c. Erysipelatous inflammation is found to occur here, as on other parts of the surface. Abscess of the vulva, in which a circumscribed enlargement of one part of the vulva only is present, is not included in the present series of cases, though vulvitis may lead to abscess.

The inflammation of the vulva produced by any of the foregoing causes may be more or less intense in degree, and the appearances observed will vary according to the time at which the observation is made. Swelling of the labia, pain on movement of any kind, tenderness, pain in micturition, redness of the mucous membrane, with more or less irritative fever—these are usually present at the commencement of the disease. A discharge more or less copious, and generally of a purulent or muco-purulent character, is found issuing from between the labia; the skin at the upper and inner parts of the thighs is excoriated. The swelling may be very considerable. If the case be not seen until a later period, the swelling may have subsided; but the tenderness, together with a constant discharge, and a troublesome irritation and excoriation of all the mucous surface, are usually still found to be present.

In some cases we find the mucous surface of the vulva covered by diphtheritic patches of exudation, there being at the same time a subacute inflammatory condition of the vulva generally. The patient is, under such circumstances, weak and prostrated, and these cases may occur epidemically.

An aphthous form of inflammation may attack the vulva—an affection more especially observed, however, in children.

With vulvitis may be conjoined inflammation of, or discharge

* *Obst. Trans.* vol. iii.

from, the vaginal canal higher up; and in fact chronic vulvitis is usually associated with vaginitis. But the inflammation is very frequently almost entirely limited to the surfaces of the vulva; and hence the necessity for considering such cases apart.

Chronic inflammatory Affections of the Vulva.—In *eczema* of the vulva, we find redness of the skin of the folds between the labia and the thighs and their neighbourhood, producing very constant and troublesome itching. Undue walking exercise is sometimes sufficient to produce this affection in a mild form. There is, however, a more chronic and obstinate form of the affection not uncommon. When the disease has become thus chronic, the skin is often found thickened, hypertrophied, and the hairs have in great part disappeared. *Prurigo* of the external genitals is not common; pruritus, where noticed, being due to other conditions of the parts.

Vulva folliculitis, a condition for our knowledge of which we are indebted to Dr. Oldham and Huguier of Paris, is constituted by the presence of little rounded prominences irregularly scattered over the surface of the vulva. These prominences are painful and irritable, and after a time break and discharge a little puriform fluid; and the surface of the vulva generally becomes inflamed and red, and in places ulcerated. The inflammation is seated in the mucous follicles of the surface. This condition is met with more especially in pregnant women and during the heat of summer, and appears to be caused by want of cleanliness, by excessive indulgence in sexual intercourse, &c. The sphincter of the vagina is frequently, according to Dr. Oldham, contracted; and a painful hyperæsthetic condition of the vulvar orifice is sometimes associated with this follicular inflammation. The little ulcerated surfaces left after the escape of the pus are distinguished from ulcers due to syphilis by the fact that in syphilis the ulceration is more generally on the inner surface of the labia minora, by the larger surface of the ulcer, and by the peculiar history of its appearance; whereas, in vulvar folliculitis, the whole vulva is more or less affected, the surface ulcerated is very small, and not inclined to spread.

The affection is a very painful one; the patient finds a difficulty in sitting comfortably; pain on intercourse, troublesome pruritus, occasional bleeding from the surface, slight discharge—these symptoms are, one or more of them, generally observed.

TREATMENT OF INFLAMMATORY AFFECTIONS OF VULVA.

Rest, frequent ablutions, and attention to the general health, are of great importance, more especially in chronic cases.

In the treatment of cases of eczema of the vulva, in addition to rest, ablutions, &c., the use of lotions of glycerine or of solution of carbonate of soda will be found efficacious; when the disease is chronic, caustics are often the only effectual remedies.

In cases of follicular inflammation of the vulva the use of a weak lead lotion, rest, and attention to the general health, will do much to remove the disease. Dr. Oldham's favourite remedy is an ointment containing hydrocyanic acid (2 drachms), diacetate of lead (a scruple), and cocoanut oil (2 ounces), the parts being bathed with cool water before applying the ointment. In some cases of this affection which have come under my own notice, I have used nitrate of silver, in the form of a strong solution, with satisfactory results.

VULVITIS, AND DISCHARGES FROM THE GENITALS, IN CHILDREN.

These cases require to be considered apart. A good deal of misconception, and consequent injustice to individuals, have arisen in connection with this subject, and it is only now beginning to be extensively recognised as a fact that vaginal discharges from the generative passages in young children may occur quite independently of contagion.

The discharges from the genitals observed in children have, for the most part, their origin in the glands just within the vulva, the vaginal canal within the hymen being generally unaffected.

The following are the chief causes of vulvitis in children :—

1. These discharges are often witnessed in children of scrofulous or debilitated constitutions. 2. They may frequently be traced to the presence of ascarides in the rectum, directly or indirectly producing such an amount of irritation as to cause leucorrhœa. 3. Simple want of attention to cleanliness may be the only assignable cause. 4. A form of leucorrhœa is sometimes prevalent in children simultaneously with diphtheretic affections of other mucous passages. 5. Gonorrhœa communicated by the male. 6. The irritation of dentition. The fact that the child is weakly, or showing other signs of a constitutional tendency to scrofula, would lead us to connect the presence of a vaginal discharge

therewith. If the leucorrhœa proceed from vermicular irritation, there is generally extreme irritability and itching in the neighbourhood of the rectal orifice, and other well-known signs of the presence of these parasites are observed. A circumstance which I have noticed more than once in connection with the presence of ascarides in the rectum, is the objection children affected with them have to sitting on soft cushions: anything hard or angular is preferred.

Cases of rape on children sometimes result in the production of discharge of a gonorrhœal nature. The moral evidence is, in the case of very young children, often open to great suspicion: the medical evidence must be given with great circumspection, for it is in the case of very young children that discharges from other causes are, as has just been pointed out, by no means unfrequently observed.

In cases where 'violation' is suspected, the condition of the vaginal outlet is an important subject for consideration. A complete discussion of this interesting subject cannot be entered into here. The chief points to which attention should be directed, however, are the following: In *children* examined soon after violation has been effected, there are marks of violence on the external genitals, which may be bruised and lacerated, the laceration generally affecting the perineum, and together with this the hymen is found torn. These are the more usual results observed. The presence of a *discharge* from the genitals of a child, which the friends of children among the lower classes are often disposed to attribute to the effects of intercourse, is a circumstance which by itself is worth nothing as a sign of violation. The evidence of injury to the perineum, and of laceration of the perineum, is much more to be relied on than the mere presence of a discharge. For further information the reader is referred to the standard works on 'Medical Jurisprudence.' In children the signs of violation persist for a much longer period than in adults, and, in the case of the former, signs may still be present from eight to fourteen days after the occurrence. In adults the marks of violence observable are often very trifling, especially in the case of married women, and, unless extreme in degree, these evidences disappear very rapidly. In cases of suspected violation, both in adults and children, the microscope might be very usefully employed in rendering the diagnosis more certain. The spermatozoa are capable of being recognised for a very considerable time after being deposited in the vagina, and there is reason for believing that, under favourable

circumstances, they might be found in the mucus of the upper part of the vagina, even as late as twenty-four or thirty-six hours after intercourse has been effected.

PRURITUS OF THE VULVA.

The terms 'pruritus vulvæ,' 'pruritus of the vagina,' &c., have been used to designate a class of symptoms referable to the generative organs, in themselves very distinctive and characteristic, and which are also exceedingly troublesome and inconvenient to the patient.

Varying exceedingly in form and degree, the essential characteristic of the class of symptoms now to be considered is an itching sensation, impelling the patient to relieve herself by rubbing or scratching the part affected. The sensation is now and then a kind of formication only—a creeping, uncomfortable feeling on the surface of the external generative organs. More commonly, however, the sensations complained of are more intense in degree and somewhat different in kind. The irritation was accurately described by Dr. Rigby as 'like that of urticaria; viz. a sensation of intolerable pricking and tingling, combined with burning heat and intense itching.'* It is worse at some times than at others; it is not seldom quite intolerable to the patient. Scratching affords hardly a temporary relief, and shortly itself gives rise to further inconveniences. Combined with the itching there is more or less constantly a feeling of heat in the parts affected quite as distressing as the other sensation.

Even in the worst cases there are usually remissions, during which the patient is more free from discomfort; and, as a general rule, it is stated that at certain times of the day, or under certain peculiar circumstances, the sensation is experienced much more intensely: the affection is, indeed, more or less paroxysmal. Warmth particularly is liable to bring on a paroxysm; the heat of the bed is especially unbearable, the patient being obliged to leave her bed almost every quarter of an hour to obtain relief. After eating or drinking, too, the distress is usually greater. The congestion of the genital organs, associated with approach of the menstrual period, aggravates the affection.

The actual *seat* of the sensation is open to some variation. In most cases the irritation is not confined to one spot, but is felt

* *On Diseases of Women*, p. 247.

equally over the pudendum, over the labia, and, in fact, all round the vaginal aperture. In some cases, the nymphæ, the surface of the clitoris, and the adjacent surface of the vaginal canal, especially the anterior commissure above the clitoris, are the parts more particularly affected. Lastly, there are a certain number of cases in which the sensation has its seat, not at the external generative organs, but more internally.

The affection may be observed in women of all ages. It is perhaps most frequently observed at the climacteric period, when the menses are about to cease, although it is by no means limited to this period. It is more often observed in women advanced in life than in young women. The unmarried and married are almost equally liable to it.

As regards the duration of the affection, it varies. Women sometimes remain subject to it for several months, or even longer. The pruritus is in many instances so persistent that the patient becomes worn out, exhausted, and prostrated in the extreme, owing to the want of rest, the annoyance, and the pain so long continued. The necessity of applying the fingers to obtain a slight temporary relief by scratching excludes her from society. Altogether, a bad attack of pruritus is about as troublesome and inconvenient an affection as any to which a woman can be subject.

What is the nature, and what are the causes of the affection? The affection varies very much as regards its nature and causes in different cases. It is possible that at the beginning the affection may be in the majority of cases identical; but in practice we find that most cases, when they come under observation, are of a mixed character. Scanzoni regards the affection as hyperæsthesia of the sensitive nerves of the vagina, in some cases idiopathic, in others secondary, and in the latter depending on various affections of the ovaries, vagina, uterus, &c.; and the various alterations of the external generative organs witnessed in conjunction with it are considered by this author secondary in their nature.

I have met with two very marked cases where the pruritus was most unquestionably due to acute anteflexion of the uterus, the disorder disappearing instantly the position and shape of the uterus were altered. Scanzoni also places flexions among the list of causes of pruritus.

Any circumstance favouring *congestion of the generative organs* may give rise to it. Thus, in the earlier months of *pregnancy* it is not rarely observed. Where a sluggish, inactive condition of the abdominal viscera is present, associated with digestive de-

rangements, as in individuals taking but little active exercise and living well, there exists a liability to the affection: in cases of the latter description, hæmorrhoids are frequently present, and constipation is very generally observed. It is in cases coming under this category that the pruritus is found most often associated with a good deal of hyperæmia of the external generative organs; and in this class of cases, also, the scratching and rubbing most frequently have the effect of producing inflammatory changes of the vulva and parts adjacent.

Chronic diseases of the uterus are frequently connected with pruritus of the genital organs; in *carcinomatous* disease of the uterus, the affection in question is certainly very frequently witnessed. Possibly the frequent association of uterine cancer and pruritus is connected with the acrid character of the fluid discharges then passing over the vulva. Cases in which it was due to *superficial granular erosion of the os uteri* are mentioned by Drs. West and Churchill.

Radical disorder of the general health, quite independent of disease of the generative organs, has been found to be the cause of pruritus in some cases. Thus Dr. West alludes to an instance in which a young lady suffered severely from pruritus, which turned out to be due to diabetes.

An *acrid condition of the secretions of the sebaceous glands of the vulva* appears to be sometimes the cause of the pruritus. *Ascarides* in the rectum have been known to produce it.

In individuals of uncleanly habits, pruritus of the vulva is sometimes produced by the presence of *pediculi*.

An *aphthous* form of inflammation of the vulva was first alluded to by Dr. Dewees as now and then giving rise to pruritus of the vulva; the inner surface of the vulvar commissure being covered with little aphthous patches, and more or less congestion of the parts generally being conjoined. How far this condition is primary or secondary cannot be considered as determined.

Inflammation of the mucous follicles of the vulva—*vulvar folliculitis* (Oldham)—is a disease of the vulva in which troublesome pruritus may be present.

In a case which came under my own notice, very intense and obstinate pruritus was found to be dependent on the presence of *warty growths from the under or vaginal surface of the urethra*, the whole forming a tumour the size of a walnut. In this case the removal of these growths was necessary, and a cure soon afterwards resulted. The *vascular tumour of the urethra*, which, as is

well known, grows within or at the urethral orifice, gives rise to great disturbance of the function of micturition; less frequently, it is a cause of pruritus.

Lastly, it may be stated generally that there are few alterations in the mucous surface at or near the vaginal aperture which may not be associated with pruritus.

Treatment.—The *general* treatment of pruritus of the vulva consists in correcting whatever may be found wrong or prejudicial to health in the habits, mode of life, diet, and regimen of the patient. The digestive organs should be duly watched, constipation prevented. The food given must be light and simple. In that form of the affection observed in women past the climacteric age, where there is debility, defective digestion, and want of appetite, without any, or, at all events, any considerable alteration of the skin covering the pudendum, mineral acids combined with bitter infusions are of the greatest service. Small alterative doses of blue pill are occasionally useful.

The *local* treatment consists in the removal of any condition which may be found to be associated with the pruritus, whether it be the cause or the effect of the same. And this local treatment will be, according to the nature of the case, palliative or curative. The local treatment will necessarily vary according to the actual condition of the parts discovered on examination. It is generally the case, indeed, that some abnormal condition of the surface of the labia and adjacent parts is present, which, as before remarked, may be primary or secondary as regards the pruritus. In some cases the local treatment is all that is necessary for the cure. Cleanliness is the first essential. The external genitals must be frequently and thoroughly washed with tepid or quite cold water. The hip-bath should be frequently used, for the application of water is almost always grateful to the patient. If there be much fulness of the blood-vessels of the vulva, leeches are sometimes necessary. A rather strong cauterisation of the os uteri with solid nitrate of silver will sometimes succeed when other measures fail.

Respecting special topical remedies, Scanzoni speaks most highly of a mixture consisting of chloroform two parts, and almond oil thirty parts, to be applied to the surfaces of the labia and of the ostium vaginæ. I have found this remedy of the greatest service, but the quantity of chloroform is too small. One part of chloroform in six of oil is the proportion I have used. Dr. West finds goulard water and hydrocyanic acid a very valuable appli-

cation. When aphthæ are present, borax in solution with a little morphia (borax ʒiv., morph. hydroch. gr. viij., rose-water ℥x. —West) has been found very efficacious. The late Dr. Rigby found an ointment composed of equal parts of ung. hyd. nit. ox. and cod-liver oil very successful when other measures had failed. Alum and powdered sugar sprinkled over a tampon of cotton and inserted in the vagina twice a day for a week, is a remedy used by Scanzoni. The latter author states that Scholz's remedy, the calladium sequinum, has in his hands given satisfactory results. Cauterisation by means of nitrate of silver has been employed by several. For pediculi Churchill recommends turpentine, tobacco or calomel in powder.

Rest, cooling lotions, &c., are sometimes required to subdue the inflammation consequent on the scratching.

CHAPTER XXXI.

DISEASES OF THE VAGINA.

Methods of Examination; Digital and Ocular Examination—Normal Condition of the Vaginal Canal.

Obstructions of the Vaginal Orifice and Vagina; their Diagnosis.—Diagnosis of suspected defective Development, or of entire Absence of the Uterus, Vagina, &c. —Double Vagina—Hardness or Resistance of the Vaginal Wall.

Tumours projecting at or beyond the Ostium Vaginæ.—Diagnosis.—Cystocele; Ascites with Prolapse of Vaginal Wall; Vaginal Cyst; Menstrual Retention—Vaginal Rectocele; Entero-vaginal Hernia—Tumours connected with the Uterus—Polypus of the Vagina.

Diseases of the Vagina.—Congenital Defects: Stricture of the Vagina—Extreme Narrowness—Various unusual Conditions of the Hymen—Menstrual Retention associated with Imperforate Hymen—Treatment of Defects and Occlusions of the Vagina.

Vaginitis: Treatment—Spasm and Hyperæsthesia of the Vulva—Treatment.

Fistulæ: Vesico-vaginal and Recto-vaginal Fistula—Treatment.

Tumours of Vaginal Walls—Treatment.

Methods of Examination.—The ordinary method of obtaining information as to the condition of the vagina is by the introduction of one or more fingers into the canal—*digital* examination. It is sometimes necessary to add to this an ocular examination of the canal, either with or without the aid of the speculum.

Digital examination of the vagina is effected in the following manner. The patient lying on the left side, the forefinger of the right hand, previously well oiled, is introduced between the labia and into the vagina. For the purpose of ascertaining the condition of the parts near the lower extremity of the canal, the introduction of one finger is sufficient; but it is generally necessary to introduce the second finger also, to examine the condition of the vagina higher up: in a few cases, the introduction of all the fingers is found necessary. In effecting this operation, the left hand should be placed on the right hip of the patient. This assists in giving a correct idea as to the position of the entrance of the vagina. The finger or fingers must be introduced slowly and with care.

The examination of the *canal of the vagina* is accomplished by the finger or fingers introduced as before described. Information is thus obtained as to the size, shape, and direction of the canal, as to the state of the lining membrane, its sensibility, smoothness or roughness, and its temperature. In certain cases, the eye may be also used, in order to ascertain the presence of undue redness or other changed conditions of the mucous membrane, and a more minute examination of the canal by means of the speculum is necessary where the presence of unnatural communications between the vagina and the bladder or rectum is suspected; also in some other cases.

Normal Condition of the Vaginal Canal.—With the patient lying on the left side, the distance from the upper extremity of the vagina to the situation of the hymen is, in round numbers, three inches, as a rule rather less. This distance measured off on the forefinger, extends from the point of the finger to the centre of the proximal phalanx; but the measurement from the upper part of the vagina to the lowest part of the commissure of the vulva is four inches. Practically, it is necessary to bear in mind that the distance from the external surface of the body to the extremity of the vagina is one inch greater than that of the vagina itself. Normally, when the tip of the forefinger touches the highest point of the vagina, the metacarpo-phalangeal joint corresponds exactly with the entrance of the vulva. In very stout subjects the distance appears greater because of the thickness of the lips of the vulva.

In effecting an *ocular* examination of the vagina, the patient is placed in the position above described, or, as is more convenient under some circumstances, lying on her back and the knees separated. The examination by means of the speculum is also effected in either of the two positions indicated, but most easily in the latter. In searching for fistulæ in the vesico-vaginal septum, the patient is sometimes placed on the hands and knees.

OBSTRUCTIONS OF THE VAGINAL ORIFICE AND VAGINA: DIAGNOSIS OF THESE.

On attempting to introduce the finger at the vaginal orifice an obstruction may be encountered. This obstruction may be due to any one of the following conditions:—

Adhesion of the labia majora;

Absence of the vagina (congenital);
Imperfect formation of vagina;
Presence of the unruptured hymen; or,
Stricture of the lower part of the vagina (acquired).

Adhesion of the labia majora is distinguished from absence of the vagina by the use of the probe or finger. Imperfect formation of the vagina is also readily distinguished from either of these two former conditions. Obstruction due to the hymen is distinguished from the two former by its situation, the hymen being a short distance within the vaginal canal and not on a level with the perineal surface.

In cases where the vagina is very short, ending at or near the position of the hymen, the physical examination may reveal conditions pretty nearly resembling those present where the hymen is the obstructing agent; the finger can only be made to pass a short distance. The distinction then rests on the presence of the catamenial discharge in the latter, its absence in the former class of cases. Where there is obstruction to intercourse, but menstruation is present, it is clear that the vagina cannot be, altogether at least, absent. But there may be obstruction to intercourse from presence of a thickened, but still perforated, hymen. If the hymen were absolutely imperforate, there would be menstrual retention with its peculiar signs, in addition to other signs of obstruction. Congenital stricture of the vagina is usually situated higher up than the seat of the hymen. Congenital narrowness of the vagina would be easily and obviously distinguished from obstruction due to thickened hymen. Spasmodic action of the sphincter vaginæ may produce obstruction to the entrance of the finger, or to sexual intercourse, but this form of obstruction could hardly be confounded with that due to thickened or imperforate hymen.

Diagnosis of Cases of Suspected Defective Development or of Entire Absence of the Uterus, of the Vagina, &c.—We have now to consider the diagnosis of cases where the vaginal orifice is absent, or the canal small, short, and imperfectly formed. It is occasionally necessary to determine what is the state of the internal generative organs in such cases, in reference to the advisability of recommending marriage, &c.

In the first place, it appears from a careful consideration of recorded facts, that the conditions presented by the *external* generative organs give but little clue to the condition of the internal generative organs; that is to say, that there is no constant and invariable relation between the degree of the development of

the generative organs, external and internal. Thus we meet with cases recorded in which the vulva being pretty well developed, the pubes well covered with hair, the breasts not imperfectly formed, the uterus is entirely absent. And the opposite condition has been met with, viz. absence of developed external generative organs with presence of a uterus sufficiently well formed to exercise its functions. Between the two extreme cases all sorts of gradations are witnessed and have been recorded. In cases where the internal generative organs are imperfectly formed, the variations from the normal standard are numerous in kind and degree; the uterus may be double, one cornu being well developed, the other imperfectly so, or both equally well developed. In extreme but very rare cases, the uterus is entirely wanting. Kussmaul,* whose elaborate work embraces all at present known on the subject, states that in many of the older recorded cases of absence of uterus, the nature of the condition which was actually present is not clear, as the diagnosis rested on the absence or defective condition of the vagina; and he believes that in the more modern instances, even where the more careful and extended examination to be presently described was performed, one cornu of the uterus may still have been present, escaping recognition.

The variations in the development of the vaginal canal itself, standing as it does midway between the external and internal generative organs, are very important and interesting. It is more usually the case, that where the uterus is defectively formed, the vaginal canal is also defective in some way; but cases are on record in which the vaginal canal has been altogether absent, while the uterus has been well developed enough to fulfil its functions. It is obvious that cases of the latter description have a great practical interest, for in those instances most may be done in the way of relief to the patient.

1. The indications offered by the state of the *breasts*. These offer little assistance in enabling us to determine the condition of the internal generative organs. They may be found tolerably well developed in cases where careful examination convinces us that the uterus is wanting, and the vagina absent. And as Kussmaul very pertinently observes, the mammary glands do now and then become enlarged and developed in the opposite sex. The presence of breasts tolerably large and developed would, however, inform us that the patient had arrived at the age of puberty.

2. The development of the vulva, presence of hairs on the

* *Op. cit.* p. 108.

pudendum, &c. The vulva may be apparently well formed, there may be the usual amount of prominence of the mons veneris, the parts may be well covered with hair, and, in fact, the external appearances may be such as are observed under normal circumstances; and yet the uterus and vagina may be wanting. Indeed, cases have been observed, as the one related by Dr. Ormerod and Dr. Quain, in which, with these external apparent evidences of womanhood and capability for marriage, not only was the uterus absent, but the ovaries were wanting. A 'small mass, apparently of a glandular structure,' found in the left wall of the narrow sac representing the vagina, was the only possible representation of the ovaries.* The patient died in an anæmic state at the age of 33, and had suffered from nasal hæmorrhages, the monthly periodicity of which seemed to point to the existence of a sort of vicarious menstruation. The case is remarkable as showing very clearly how little relation subsists, necessarily, between the development of the external and internal sexual organs. I have myself met with cases in which the breasts were normal, the pudendum normal, and well covered with hairs, but no evidence of the existence of a uterus could be obtained.

When it is an object to ascertain by examination whether the uterus and vagina be present or not, the method to be pursued is the following: a catheter is to be introduced into the bladder, which should not be empty at the time the examination is made, and held lightly but firmly therein. One or two fingers of the left hand, well oiled, are then to be introduced as far as possible into the rectum. The catheter can now be felt by the extremity of the finger in the rectum, and a means is at once afforded of judging of the nature of the tissue intervening. If the uterus be absent, the catheter can be felt by the finger high up in the pelvis, and no intervening hard substance, such as that constituted by the uterus, can be detected; but it is necessary, in order that this point may be conclusively made out, that the catheter in the bladder and the finger in the rectum should be pushed as far as possible, for if the catheter be only just made to enter the bladder, the point of the instrument is, under ordinary circumstances, readily felt by the finger in the rectum. The uterus would of course be sought for in the first instance in the middle line of the body, but if a careful examination failed to discover any hard substance in that position, it should be sought for on each side.

* *Transactions of the Pathological Society*, vol. vii. p. 271.

Where the uterus is double, it is very frequently not symmetrical, the one cornu being large and well developed, the other small and imperfect; and in such a case the larger cornu lying, as it would do, rather to one side, might not at first be made out, or if made out, might be mistaken for something else (Kussmaul). This double or combined examination by the rectum and bladder is thus capable of giving important information, for although we might not be able to affirm after making such an examination that the uterus was entirely absent, we could hardly fail of detecting the presence of an enlarged and distended uterus, supposing the uterus to be so enlarged and distended. The uterine sound is, in some cases, a better instrument to introduce into the bladder than the female catheter, as it is more under command of the hand and can be bent to any required degree.

The method of examination in question also enables us to form some idea as to the condition of the parts in suspected absence of the vagina. Thus, in cases where the only external evidence of the existence of a vagina is the presence of a small blind sac which is just capable of receiving the point of the sound, or in cases where the sac is large enough to admit the little finger for an inch or two, the combined examination furnishes data of some value. If the parts intervening between the point of the instrument and the finger be very thin, this gives reason to think that there is no vaginal canal between; but this is by no means conclusive evidence of the fact. If the uterus were found very small, or absent altogether, the vagina would be more likely to be also absent. But, on the other hand, supposing the uterus were found to be present, the septum between the rectum and the catheter being apparently very thin, it would require some care to decide as to the presence or absence of the vaginal canal in this thin septum. In some cases the uterus is pretty well formed, and becomes distended with menstrual blood, which cannot escape, because the vagina is absent at some part of its course; and the vagina may be nearly the natural size at its extreme upper and lower portions, the intermediate portion being wanting; or it may be, as is the more common case, very small below, and absent above.

Double Vagina.—The vagina may be double, in which case two canals open side by side externally. The septum between them is usually very thin. (See 'Malformations of Uterus.')

Hardness or Resistance of the Walls of the Vagina.—A condition of the wall of the vagina, recognisable by the touch and very important in a diagnostic point of view, is *firmness, hard-*

ness, and *resistance*, especially at the upper and interior part of the canal. The vagina appears to the touch fixed, rigid, and immobile; such a condition is one of the early signs of the presence of cancer of the lower part of the uterus. The non-resistant, soft, velvety feel of the mucous membrane is wanting in such cases at the affected parts.

Cancerous disease of the vagina, is more frequently not primitive, the disease usually spreading from the uterus. When the disease has far advanced, we may find the vaginal walls very much thickened by the cancerous deposit; nodulations may be felt; and ulcerations, which, when sufficiently advanced, give rise to production of fistulous openings, are detected by the finger. The diagnosis of the cancer of the vagina is intimately connected with that of cancer of the uterus, the general symptoms present in the two cases being, for the most part, identical.

TUMOURS PROJECTING AT OR BEYOND THE OSTIUM VAGINÆ; DIAGNOSIS.

Soft non-Resistant Tumours.—A soft *fluctuating* tumour presenting itself at the ostium vaginæ may be constituted by a *prolapsed bladder* (cystocele), the cervix of the uterus being very generally in such cases prolapsed together with the bladder. Or there may be *prolapsus of the vaginal wall in conjunction with ascites*. In the former case there is a peculiar difficulty in regard to micturition, for the patient is unable to evacuate the bladder perfectly unless the swelling be first reduced by pressure upwards. Micturition is frequent and painful, a ropy mucus is usually present in the urine discharged from the bladder. The catheter introduced passes downwards into the tumour, the nature of which is thus at once made manifest. In the case of the other, but less common, affection the tumour is also reducible by pressure, but returns on the patient resuming the erect posture. Dr. West* relates a case in which a *cyst of the vagina*, the size of an egg, projected from between the vulva, and had just the appearance presented by a prolapsed bladder. By the use of the catheter, however, the nature of the tumour was made evident.

In cases of *retention of the catamenial fluid from imperforate hymen*, there will be found between the labia on examination by

* *Op. cit.* p. 634.

the finger a somewhat tense tumour with fluid contents, and this tumour may project slightly from within the os vaginæ. In such a case the absence of menstruation, and the impossibility of finding an opening into the vaginal canal, would clearly indicate the nature of the case.

A soft but *non-fluctuating* tumour projecting from the vagina at its inferior part, and reducible by pressure, is present in cases of *vaginal rectocele*. In such cases the nature of the tumour is easily made out, the scybalæ in the projecting pouch of the rectum are felt by the finger: moreover the finger can be introduced in *front* of the tumour; in cases of cystocele, on the contrary, the finger passes only *behind* the tumour.

Entero-vaginal Hernia.—Another variety of tumour is that due to hernia of the intestines—entero-vaginal hernia. This is a rare affection. Some exceedingly interesting cases of the affection are related at length in the work of the late Dr. D. D. Davis.* A case of this rare affection was also recorded by Mr. Prescott Hewett.† The tumour projected beyond the labia, and proceeded from the floor of the vagina. The patient was suffering from symptoms of obstruction, and had not called attention to the existence of the tumour in question. The nature of the tumour is recognised by means of the tympanitic sound elicited on percussion, by the impulse produced on coughing, usually by the possibility of reduction of the tumour by the taxis, or on the patient assuming the horizontal posture. The employment of the catheter will distinguish the case from one of cystocele.

Hard Resisting Tumours Projecting from the Ostium Vaginæ. —When the projecting tumour is more or less solid or firm, it is due to *inversion of the uterus*, *polypus of the uterus*, *prolapsus of the uterus*, or to *elongation and hypertrophy of the cervix uteri*. With these may be combined prolapsus of the adjacent organs, the bladder, rectum, &c.

We may now proceed with the description of the various

DISEASES OF THE VAGINA.

Congenital Defects.—In some rare instances, certain of the external generative organs are wanting, or exhibit only a rudimentary formation. The whole of the external sexual organs may be found absent, or there may be present what is termed 'cloacal for-

* *Principles and Practice of Obstetric Medicine*, vol. i. p. 161.

† *Brit. Med. Journ.* Sept. 1861, p. 254.

mation,' the rectum, the vaginal canal, and the urethra opening into one common external orifice. And irregularities of other kinds may be observed, giving rise to conditions which have been described as due to hermaphroditism. A full consideration of these various kinds of defective formation of the external generative organs cannot be entered upon in this work. Particulars concerning these rare cases will be found in several systematic treatises.* The defects which are the most practically interesting are those which relate to the condition of the orifice of the vagina, and the canal of the vagina itself. These have been already described in the previous remarks on the diagnosis.

STRICTURE OF THE VAGINA.

There are two classes of cases coming under this denomination. First, we have those *congenital* instances in which the vagina is normal below, the hymen in its usual position, but a short distance above the hymen the finger meets with an obstruction—the canal of the vagina, in fact, appears far too short. Here the apparent shortness may prove to be due to presence of a fibrous or membraneous septum dividing the vagina above the hymen into two parts. The usual seat of this septum is the junction of the upper with the middle third of the vagina. In the second place we have cases of real stricture of the vagina, due to adhesions of the opposite walls, following after lacerations or wounds of the vagina, the primary cause of such lacerations being accidents connected with the process of parturition, lacerations of the vaginal walls with subsequent cicatrisation and contraction.

Regarding the congenital class of cases, we may have complete absence of an opening in the septum, there being then usually found to be present an accumulation of menstrual blood above the obstructing membrane or partition; or, on the other hand, there may be an opening sufficient to allow of the escape of menstrual blood. It is obvious that in the former case there is no possibility of menstruation occurring, and impregnation is equally impossible. Such instances are not common. Complete congenital closure of the vagina might be confounded with imperfect hymen,

* A good account of the subject will be found in Kiwisch's *Klinische Vorträge*, Band ii. (third edition, by Scanzoni. Prague: 1857). On the subject of hermaphroditism, the reader is referred to the admirable essay by Sir J. Y. Simpson, published in vol. ii. of his *Obstetric Works*.

or with imperforate condition of the os uteri. Incomplete (*i.e.* permeable) congenital stricture of the vagina might be confounded with obstruction from resistant hymen. The diagnosis in these several instances would be made out by careful combined examination by the vagina and rectum. The finger being introduced into the rectum, the observer is enabled to determine whether the obstruction felt be really the extremity of the vagina or not; the position of the uterus would indicate this clearly enough.

The cases of acquired complete stricture of the vagina are very easily distinguished from those of the congenital variety by the circumstance that in the latter cases the patient has never menstruated. In acquired stricture of the vagina the canal at the seat of the stricture is generally irregular in form and shape, contorted or knotty, and firm fibrous bands are to be felt under the finger. The seat of the stricture may be high up in the vagina, or low down; any part of the canal may be affected. Menstruation more often still persists, but the stricture, if complete, causes complete suppression; and, moreover, the patient in the latter case remains afterwards sterile. The history very generally points conclusively to the diagnosis in these instances of acquired stricture of the vagina.

Extreme narrowness of the vagina, hardly amounting to stricture, may be met with, the canal being quite patent, although exceedingly small; the condition simply interfering with due performance of sexual intercourse, though not necessarily with impregnation. It has importance, for this reason in the first place, and in the second from the circumstance that when the vagina is very narrow it is also often short, and the uterus is found imperfectly developed. All degrees of this narrowness may be met with in different cases.

It may be worth while in this place to mention the fact that, in cases of vaginal stricture or narrowness, sexual intercourse has been known to have been effected by the urethra; the latter canal has in such cases been found to have undergone great dilatation.

The treatment of these various conditions will be considered presently.

VARIOUS MORBID OR UNUSUAL CONDITIONS OF THE HYMEN.

The hymen is a membrane varying exceedingly in its form, structure, and dimensions. On making a digital examination, the point of the finger, in passing backwards, downwards, and inwards from the point where the urethral orifice is situated, encounters the hymen, if this membrane be present; the membrane itself being situated within a short distance of the posterior labial commissure. The finger passes into a recess for a short distance before it comes in contact with the obstructing body. This it is important to bear in mind in distinguishing these cases from cases of absence of the vagina: in cases of the latter kind, the obstruction is on the surface. The most usual form of the hymen, where still intact, is crescentic, the concavity being directed forwards and upwards: the canal of the vagina is thus closed posteriorly, but not anteriorly. This is the most common form, but occasionally the hymen is circular, and the opening into the vagina is in its centre. In the first case the tip of the finger would meet with the opening a little nearer to the urethral orifice than in the second. The presence of the hymen was at one time considered evidence of virginity, and its absence proof to the contrary; but neither of these positions is sustained by known facts. Instances are recorded of the presence of the hymen in prostitutes who were at the same time the subjects of syphilis; on the other hand, in women of known virtue and propriety of conduct the hymen is often indistinct or wanting. If we are called upon to make a digital examination of a reputed virgin, we should expect to find a difficulty in introducing the finger into the vagina, owing to the presence of the hymen; but we should not be justified in forming a conclusion unfavourable to the character of the individual from the fact, alone, that no such impediment to the passage of the finger was experienced. And with reference to the *degree* of resistance, we should expect to find, in cases where the hymen is tolerably perfect, considerable differences in different cases. Thus, the membrane may be, and indeed it usually is, thin and non-resistant enough to allow of the ready distension and stretching of the orifice in its centre or at its side by the pressure of the finger; in certain rare cases this condition persists after marriage with the occasional very troublesome result that intercourse is extremely painful and very difficult: on the other hand, it may be so dense and tough as to resist this distension altogether, or the membrane may be so loose and lax that

the pressure of the finger, instead of opening it, carries the membrane before it, as in the case of the finger of a glove pushed within itself. Lastly, there may be only such slight perforation in the membrane as to be hardly recognisable, and not at all by the point of the finger alone: the obstruction is apparently complete. These variations in the physical condition of the hymen are of importance in reference to the diagnosis of the cause of sterility.

When we are called upon to investigate a case of obstruction of the vaginal entrance, and in which the hymen is the part involved, we generally find that there is difficulty in sexual intercourse, or, that there is sterility, without any allusion being made by the patient to difficulty in intercourse, or that menstruation has never occurred. In the latter case, there is possibly menstrual retention due to imperforate hymen. And the case has to be considered from these different points of view.

Menstrual Retention due to Imperforate Hymen.—The relation of abnormal conditions of the hymen to possible menstrual retention, as being a very important subject, demands special mention.

The form of menstrual retention associated with imperforate hymen is observed in young women who have never menstruated, who have arrived at puberty, and who have at that time experienced, monthly, and month after month, severe pain in the hypogastric region without any fluid escaping from the vagina, and who present symptoms indicative of distension of the uterus with fluid for which there is no natural outlet. In most of such cases, the hymen is found to be imperforate, and the finger, when introduced into the vulva, comes upon a very tense elastic swelling, constituted by the thickened hymen pressed downwards and put on the utmost stretch by the fluid incarcerated above it. The menstrual blood distends the vagina and the uterus under such circumstances, and we should expect to find evidence of such distension of the uterus in the presence of a round firm tumour above the pubes (see 'Examination of the Abdomen'), or on examination from the rectum. But in some cases, although the patient has never menstruated, and although there are all the signs of menstrual retention present to an extreme degree, we do not find, on examination, any tense elastic swelling at the situation of the hymen; for the menstrual retention may be due to congenital closure of the os uteri, or to an obstruction of the vagina higher up than the situation of the hymen. The latter description of cases will be presently considered.

TREATMENT OF VARIOUS FORMS OF OCCLUSION OF THE VAGINA.

Absence of the Vagina.—There are two classes of cases to be dealt with: 1. Those in which the absence of the vagina is accompanied with signs of menstrual retention; and 2. Those in which no signs of menstrual retention are present. This division is a practical one, for in the first class of cases operative measures are generally called for, while in the second this is not usually, or at all events necessarily, the case. The cases of retention have been already dealt with (see p. 325).

The point has hardly been raised as to whether in cases of absence of vagina without menstrual retention operative measures are called for. If the uterus be present, if the patient be healthy and well-formed, and, further, if menstrual molimina have been present—even although there may be no evidence of menstrual retention—under these circumstances, the attempt to make an artificial vagina could not be said to be absolutely unjustifiable. Until the uterus has been reached, it could not be said that menstruation, and consequently pregnancy, was quite out of the question. In making these remarks, I have in my mind a case respecting which I was consulted some time since, and in which I have reason to think that the formation of a vagina would be attended with advantage.

Stricture or Occlusion of the Vagina.—The stricture of the vagina, resulting from the contraction following mechanical injuries received during parturition, is often very difficult to remedy. The two methods of cure are by incision and subsequent dilatation, or by dilatation alone; and which of the two courses is preferable will be determined by a consideration of the nature of the case. Where the stricture is very firm, and at the same time limited in extent, an incision by a blunt pointed bistoury at once restores the canal to its natural size, the opening being maintained by careful plugging of the vagina with oiled lint. The plugging must be persisted in for some days. In other cases, where the stricture affects a greater extent of surface, cutting may be less necessary, and the gradual dilatation by bougies may be preferable. Any tight bands encountered as the process of dilatation is being effected should be just touched with the edge of the knife to facilitate the dilatation.* In cases where labour super-

* Dr. Braxton Hicks has related some interesting cases of acquired stricture of the vagina. The plan pursued in treating these cases, and which proved very successful, was a combination of cutting and dilatation. *Obst. Trans.* vol. iv.

venes in these cases of stricture of the vagina, the fœtal head forms a very efficient dilating body, but the dilatation often requires to be assisted by the careful use of the knife. Much time and patience will be necessary in some cases to restore the canal to its proper condition, owing to the great tendency of the cicatricial tissue to contract after being divided. Where cutting operations are performed strict antiseptic precautions are essential.

In cases where the stricture is congenital, there being, however, a minute opening, allowing of menstruation, but rendering intercourse difficult, the existing opening is to be sought for by means of the speculum, and enlarged by the knife, the canal being subsequently plugged with lint, to prevent adhesion of the cut surfaces.

Simple narrowness of the vagina will be best treated by careful employment of bougies, gradually increased in size until the canal is sufficiently large to admit of intercourse. Parturition is the great cure for this condition, and it is remarkable how easily an apparently very narrow vagina gives way, so as to allow of the passage of the large head of the fœtus. Once fully dilated in this manner, the cure is complete.

Treatment of *obstruction due to the hymen.* In patients who have menstruated, the obstruction usually requires to be removed on account of its interference with the performance of sexual intercourse: in some cases obstruction to sexual intercourse thus caused accounts for the presence of sterility. The treatment of such cases is simple. The operator having carefully made out by examination the shape, size, and relations of the hymen, which, under these circumstances, may be found exceedingly dense, firm, and thick, introduces a blunt-pointed bistoury through the aperture in the hymen, which is usually situated immediately beneath the urethral orifice, and a crucial incision is then made in the obstructing membrane, care being taken not to involve the vaginal wall itself in the incision; or, as recommended by some authorities, a circular piece may be actually cut out, the whole hymen being thus removed. The one procedure may be superior to another in a particular case. After the operation a piece of lint, rolled up in a cylindrical form and dipped in oil, should be carefully introduced. The tampon of lint should be so large as to slightly distend the canal and prevent the healing by the first intention. The lint will have to be removed, and a fresh piece inserted twice a day, for the next two days.

The treatment of cases of imperforate hymen, causing menstrual retention, has been already discussed (see p. 325).

VAGINITIS.

Inflammation of the vaginal canal, in an acute form at least, is not a very common affection, although in cases of chronic inflammation of the uterus there is generally an increased vascularity of and secretion from the vaginal mucous membrane. Again, vaginitis is sometimes present in cases of gonorrhœa, but in the latter affection it is ordinarily the vulva or entrance of the vagina rather than the vagina itself which is the seat of the inflammatory action.

Treatment.—In cases where there is much heat, tenderness, and congestion of the vagina, leeches may be advantageously applied round the lips of the vulva; fomentations, by means of flannels wrung out of hot water or decoction of poppies, may be usefully employed after the bleeding, as a substitute for it in some instances. Hip-baths and injections of tepid or of quite cold water will be necessary, a stream of water being applied by the self-acting douche apparatus, described at p. 461. Other local applications may be required where the disease has assumed a chronic obstinate form. Scanzoni speaks highly of the employment of a cotton tampon, the surface of which is sprinkled with powdered alum, this being inserted in the vagina for a few hours every two or three days: the alum to be diluted with powdered sugar if the sensibility be considerable. Solution of nitrate of silver of varying strengths, according to circumstances, or the solid stick of caustic, may be also necessary. The general treatment is quite as important in the management of such cases as the local one. Rest, abstinence from intercourse, the horizontal posture, gentle aperients, food in moderate quantity, absence of excitement —all these are essential to the cure of the affection. When the patient has recovered, the principal cause which brought about the attack must be for the future avoided (see 'General Treatment of Leucorrhœa,' p. 457). The vaginitis associated with gonorrhœa requires a peculiar treatment. In the treatment of all cases of vaginitis, whatever be the cause, very great importance is to be attached to the observance of cleanliness: frequent ablutions should be employed.

ALTERATIONS OF SENSIBILITY OF THE VAGINAL CANAL, OR OSTIUM VAGINÆ.

Spasm and Hyperæsthesia.—In making an examination by means of the finger, it may be found that the entrance of the vagina is extraordinarily sensitive, the slightest touch giving rise to great discomfort; and in some cases this is so extreme that an examination is hardly practicable. This condition must not be confounded with tenderness to the touch of the more ordinary kind, which may proceed from inflammation or abscess of the vulva, from cancerous inflammation, from pelvic inflammation, gonorrhœal or syphilitic inflammations, &c., in most of which cases the tenderness is quite unlike that now under consideration. Nor must it be confounded with excessive sensitiveness of the uterus itself, such as is present in acute flexion of that organ (see 'Flexions'). The condition in question is really a hyperæsthesia of the part, dependent not always on the same cause. It has been described by various names. Marion Sims, Debout, and others, have of late years redirected attention to it, especially as a cause of sterility, and as interfering with sexual intercourse. The parts are more sensitive to a slight touch than to more rough handling. The extreme sensitiveness is mostly accompanied by a painful contraction of the vaginal sphincter—hence the terms 'vaginal spasm,' 'vaginismus,' which have been applied to it. The difficulty experienced in introducing the finger is dependent on the spasmodic contraction of the muscles. It has been described as most commonly present in individuals whose nervous system is generally in an easily excitable state. Dr. Ferguson believed, that in cases of 'irritable uterus,' one of the seats of this neuralgic malady was the vagina itself, this latter being so exquisitely tender as to render intercourse intolerable.' In Scanzoni's opinion, the disorder especially accompanies anteversions, retroversions, flexions, or actual changes of the uterus itself, and that it is not rare in connection with spasmodic affections of the urethra, bladder, or rectum. Sir J. Y. Simpson has in some instances found true small nodular neuromata under the mucous membrane.

The affection may not be due to the same cause in all cases. I am of opinion that the essence of the disorder is a local alteration or irritation of the nerves at the spot itself.

In one case which occurred under my own observation, the patient was a lady who had had two children; for some months

there had been extreme sensibility of the ostium vaginæ, intercourse being impossible. On careful examination I found that the sensibility was actually limited to one little spot near the posterior commissure, over an area of less than one quarter of an inch. The case was cured by paring away the mucous membrane over the spot, and bringing the edges together by fine silver sutures. Here it seemed probable that the hyperæsthesia was dependent on laceration and inflammation of some of the nerve fibres during labour. This hyperæsthesia is I believe not unfrequently due to partial laceration of the hymen. A very marked case of the kind recently came under my notice, when this was the evident cause. The slightest touch gave rise to expressions of great suffering, and intercourse had been found to be well nigh impossible. Here the hymen was very thin, very easily stretched upwards by pressure, returning to its original shape on the pressure being withdrawn.

Treatment.—In the treatment of this affection, the first object in view should be to remove its cause. The condition of the vulva, of the vagina, and of the uterus, must be severally explored, and any disorder discovered rectified.

It is probable that if the cases were carefully examined, many would be found susceptible of the explanations mentioned above, and therefore capable of being similarly treated, namely by removal of the affected portion of mucous membrane by the knife, or obliteration of the sensitive part. Other cases may be cured by rather freely incising the mucous membrane at the situation of the hymen, and carefully packing the passage with oiled lint so as to prevent adhesions, subsequently employing occasionally a dilator to maintain the aperture the proper size. Marion Sims * has recommended a glass speculum to be kept in the passage to prevent adhesions. This dilator may be worn for some little time. Bougies gradually increased in size may be used, but this plan is less efficacious than the other one.

The cases in which the affection actually interferes with sexual intercourse are undoubtedly extreme cases. There are others in which the spasmodic element is less marked, there being extreme sensitiveness. These cases are best treated by the use of opiate enemata : Scanzoni speaks favourably of opium and belladonna so used. In cases where no limited local derangement can be detected the general treatment is a matter of great moment. Regu-

* *Obstetrical Transactions*, vol. iii.

lar, temperate living, exercise in the open air—especially horse exercise—use of the sponge-bath, friction of the skin, cultivation of the bodily rather than of the mental powers, these measures are not subsidiary, but of primary importance in the treatment, and the patient cannot be fully restored to health if these simple precautions be neglected.

FISTULÆ.

There may be an abnormal communication between the bladder and the vagina, *vesico-vaginal fistula*, the aperture varying much in size and in shape. In some cases the whole of the base of the bladder may be destroyed, or this together with the urethra. The perforation is generally an effect of the long pressure of the head during labour. In some rare cases, a communication has been found between the bladder and the cervix of the uterus (*utero-vesical fistula*). Lastly, we have cases in which there is a perforation of the vagino-rectal septum. These are cases of *recto-vaginal fistula.*

Great misery and distress are produced by the presence of these unnatural openings, and although in themselves not grave, they are most troublesome and annoying to the patient.

Treatment of Vesico-vaginal Fistula.—There is no department of surgery in which such marked improvement has been made of late years as in the treatment of this, which is the most common of the fistulæ connected with the generative organs. Cases of vesico-vaginal fistula are now, almost without exception, capable of cure though great perseverance and patience are requisite in many cases to obtain success. To Dr. Marion Sims is due the merit of introducing the use of metallic sutures instead of sutures of thread or silk, which were formerly used, for the purpose of bringing the edges of the wound together, and of an improved speculum, by which latter instrument access is better obtained to the part involved, and the manipulations thus greatly facilitated. Mr. Gossett, of London, in 1834, published a case illustrative of the advantages of metallic sutures, but his practice never attracted attention, or led to its adoption by other individuals. Since Dr. Marion Sims introduced the use of the 'silver suture,' other modifications of the operation, the use of clamps, buttons, bars, &c., as assisting in holding the edges of the wound together, have been adopted, but latterly they have been found superfluous, and it appears that the really important part of the improved operation

is the greater nicety with which the edges of the fistulous opening can now be pared, and the newly-cut surfaces kept in close apposition. The sutures now employed are generally of wire but some operators prefer silk.

The operation, as now practised by several distinguished physicians and surgeons, is essentially the same, particular points being more insisted on by some than by others. The most complete work on the subject is Dr. Emmet's,* in which are recounted a large number of cases, many of them of great difficulty. Dr. Emmet attaches much importance to the preparatory treatment, consisting in many instances of preparatory operations, the object of which is to free the soft parts which have to be pared from cicatricial adhesions by bands, which bands prevent the pared edges from coming together properly. To the method of performing these preparatory operations Dr. Emmet attaches much importance. Cicatricial bands or resisting strictures are to be cut through by scissors instead of the knife, for the reason that the cut of the scissors heals more slowly. There is also less risk of pyæmia. The cutting asunder of these interfering bands may frequently be done at the time of the actual operation, the fistula closing before the wounds inflicted by the side of the fistula have had time to granulate and contract. But the wearing for some days of a glass speculum after cutting through the adhesions and bands is frequently advisable, as in this way previously contracted surfaces are permanently lengthened. Dr. Emmet also insists on the use of baths, injections, &c., for producing a healthy condition of the mucous membrane. Some days may have to be spent in this preparatory treatment. Dr. Emmet's recommendations are most useful and practical. He uses scissors of various curves for paring the edges. In the work of Dr. Savage also will be found very concise directions for the operations, with drawings of the various instruments required. Before the operation the bowels must be thoroughly evacuated. For the operation itself, the patient is placed on the back, as in the operation of lithotomy, on the side, with the body partially pronated, or on the hands and knees. The two former methods allow of chloroform being easily given ; the latter method is the best in difficult cases. The fistula is exposed by simply separating the labia by the fingers, and retracting the perineum by Sims's duck-bill speculum. The edges of the fistula are next

* *Vesico-Vaginal Fistula*. 8vo. p. 250. Wood & Co., New York, 1868.

pared by knives or by scissors adapted for the purpose. These require to be bent at different angles and curves so as to reach easily all parts of the circular space constituting the fistula; as regards the manner in which the paring is effected, the edges should be bevelled, the operator removing thus the mucous coat of the vagina and the muscular tissue of the bladder, but not the mucous lining of the bladder. The effect of this is that the amount of raw surface offered for adhesion when the lips are brought together is increased. Every part of the border of the fistula must be pared. The paring effected, a series of interrupted sutures are introduced; they pass from a quarter of an inch outside the edge of the wound, through the thickness of the muscular coat of the bladder, close to the edge of the cut surface, stopping just short of the mucous membrane; the same on each side. Avoidance of the mucous coat of the bladder is a point insisted on by all. The number of the sutures varies according to the size of the opening, but it is a point much insisted on by Dr. Marion Sims, that they should be numerous and close together. The sutures first used have been generally of silk. When these temporary silk sutures have been all introduced, the ends, which are hanging free, are used to draw through the silver wire permanent sutures. A very ingenious instrument of Dr. Sims is one which I have employed in these operations and have found very useful. A series of perforated steel needles of various curves and shapes carry a wire which is made to travel through the handle and shaft of the instrument by a little easily worked button. The wire is in this way carried through at once. The edges of the wound are then carefully brought together by tightening the sutures one after the other; the ends of the wire sutures are then twisted up close to the edge by the fingers or by forceps, and the wire is then cut off close to the edge of the wound.

In the performance of the operation, care is required to avoid the ureters. I have heard of more than one case in which unfortunate results have happened from the tubes in question being implicated in the operation; and when the fistula is situated high up, great care and an intimate acquaintance on the part of the operator with the anatomy of the parts are essential.

The after-treatment requires special attention. The patient is placed on the side in bed, where she must remain for some days. Accumulation of urine in the bladder is generally prevented by keeping a catheter in the bladder, through which the urine escapes, as fast as it enters this cavity, into an india-rubber bag

placed outside; or, still better, by an india-rubber pipe, to a suitable receptacle beneath. The catheter used is of a sigmoid form; the best is one of flexible metal, which is self-retaining. The catheter should be changed night and morning, cleaned carefully before reintroduction, and carefully watched to see that it does not become obstructed. Some operators, as Dr. Meadows, omit this continued use of the catheter altogether, and it is stated that the cases do equally well. The bowels are prevented from acting for a period of ten days or a fortnight, small doses of opium being given periodically for this purpose. The sutures are removed about the tenth day. In removing the sutures, each separate stitch is slightly retracted by the forceps, and then cut across on one side by means of sharp scissors.

When the base of the bladder is entirely gone, as was the case in a patient lately under my care, our alternative is to close the vagina entirely. In this particular case there was the less objection to this as the uterus was functionally destroyed by the sloughing and adhesions to which the damage during parturition had given occasion.

If the fistulous communication between the bladder and vagina be due to cancerous ulceration or to syphilitic ulceration still progressing, operative measures are quite inapplicable.

The instruments required for the operation must be specially constructed for the purpose. For preparatory operations long, blunt pointed, slightly curved scissors, and the glass plug. For the operation itself the duck-bill speculum in various sizes, or metallic, slightly flexible retractors; tenaculi with long handles, fine points, and slightly hooked in shape at the end; a blunt hook of copper, plated, to act as a probe and otherwise. Scissors (following Emmet's plan) of various curves, right and left, so as to enable the operator to pass all round the fistula, or knives with short blades set on long handles at various angles, or one knife set on a universal ball socket joint. Short needles to carry silk, of various curves, a holder to insert the needles, or Sims' self-feeding wire-carrying set of curved needles, with handle before mentioned, may be employed instead of these silk-carrying needles. Sponge holders with long handles and furnished each with a minute piece of sponge. A pair of long dressing forceps. Forceps with strong flattened points to twist the sutures; silver wire of various thicknesses. Sims' 'shield' of copper, plated, which enables the operator to steady the fistula and tighten the

suture catheters. Delineations of these various instruments will be found in Dr. Emmet's, Dr. Savage's, and other works.

TREATMENT OF RECTO-VAGINAL FISTULA.

These cases do not, as a rule, present the same difficulty in regard to treatment as cases of vesico-vaginal fistula: they are capable of being treated on precisely identical principles. The application of caustic is frequently sufficient to produce closure of the aperture. Careful paring of the edges, and use of metallic sutures, can be had recourse to, if other more simple measures fail. The treatment after the operation chiefly consists in keeping the bowels confined, by means of opium, for some days. Fistulæ due to cancerous ulcerations are not remediable by operation.

For the relief of vesico-uterine fistula, the operation of closing the os uteri and allowing the patient to menstruate through the bladder has been practised. It is perhaps the least of the two evils to leave the patient thus. Mr. James Lane records a most curious case, in which, notwithstanding closure of the os by operation, the patient became pregnant. Probably the closure was not complete. Various interesting and unusual cases will be found in Dr. Emmet's work.

TUMOURS GROWING IN OR FROM WALLS OF VAGINA.

Fibroid Tumours are sometimes met with in the wall of the vagina. Thus Sir J. Paget* removed by enucleation a hard fibrous tumour, the size of a hen's egg, from the wall of the vagina in front of the os uteri, which had been the cause of profuse losses of blood: and occasionally small growths of a similar nature are found more external to the vagina near the uterus. Again, we have the *fibroid polypus* of the vagina, attached by a pedicle, and hanging freely in the vaginal canal, and the *mucous polypus* of the vagina. These cases are rare.

Fatty tumours growing between the rectum and vagina have been met with. †

* *Med. Times and Gaz.*, Aug. 17, 1861.

† See Dr. D. D. Davis's work, vol. i. p. 137. In the works of Dr. West and Dr. M'Clintock also will be found related cases of the somewhat rare affections above described.

Cancer of the vagina presents itself in two forms. We find in some cases cauliflower-like growths on the free surface, generally in association with like growths on the cervix uteri. In others the vaginal wall is found in a thickened, hard, irregular, nodular condition. Any part of the vaginal wall may be affected. Vesico-vaginal fistula is often a result of ulceration of a cancerous deposit in the roof of the vagina.

Treatment of Tumours growing in or from the Vaginal Walls. —The fibrous tumours growing in the vaginal wall, or hanging by a pedicle from any part of the same, are only amenable to surgical treatment. They interfere with coition, and require removal. The polypoid tumours are best removed by the écraseur. If near the bladder, care should be taken not to wound this viscus in removing the tumour. A more careful operation by the knife or scissors is required when it is decided to remove a tumour which is larger, and has a wider basis of attachment.

The cystic tumours of the vagina, if pedunculated, are treated by excision. When this is not the case, the cyst may be tapped and injected, or the cyst may be dissected from its attachments, if not of considerable size. The latter plan is, on the whole, the best, as the cyst will refill subsequently, when simply tapped.

In the treatment of cancerous tumours of the vagina, the same rules are applicable as in cases of cancer of the uterus.

CHAPTER XXXII.

DISEASES OF THE URETHRA AND BLADDER.

Diagnosis.
Diseases of Micturition considered in Relation to the Diagnosis of their Causes.
Diseases of the Urethra and Bladder—Chronic Inflammation of Urethra—Treatment—Stricture of Urethra—Treatment—Vascular Tumour of Meatus—Treatment—Eversion of Urethra and Bladder—Treatment—Retention of Urine—Use of Catheter—Chronic Cystitis—Treatment—Polypus of Bladder.

DIAGNOSIS.

The disorders of the bladder and urethra are numerous, and occasionally very serious in their results. Their diagnosis is, though really simple, often attended with difficulty, for the reason that the symptoms are not unfrequently of a very misleading character.

The physical exploration of the urethra and bladder is easy. The urethral orifice can be readily seen, the canal can be easily explored by means of a sound or a catheter, and its patency or otherwise tested. The bladder can be explored by the finger from the vagina in such a way as to test its thickness and density and the presence of foreign bodies ; *e.g.* calculi within it. The bladder can also be accurately explored from within by means of the sound or the catheter.

In case of obscurity of diagnosis these several methods of examination should be had recourse to. Very easily recognisable and important conditions not unfrequently exist unknown for a long time in consequence of neglect of these principal methods of diagnosis.

The *disorders of micturition* constitute the most important of the *symptoms* of diseases of the bladder and urethra. We proceed to consider these symptoms from a diagnostic point of view.

Micturition may be, 1, *possible* or, 2, *impossible.*

1. WHEN POSSIBLE

it may be *difficult*, *painful*, *frequent*, or *involuntary.*

Micturition Difficult (Dysuria).

Pain is readily confounded with difficulty, and *vice versâ*.

Difficulty in micturition proceeds from one of two causes: either the bladder is incapable of expelling its contents; or, the exit of urine is prevented by some abnormal condition of the urethra.

The *bladder is inefficient* when its muscular fibres are paralysed, or, which amounts to the same thing, when they do not act. *Paralysis of the walls of the bladder*, in this sense of the term, is not a common affection; it is witnessed in the last stage of low fever—in puerperal fever, *e.g.*—and it may be the result of long-continued distension of the viscus, whereby the muscular fibres have their contractility destroyed or lessened, as during parturition.

The cause of the difficult micturition in cases of this kind would be tolerably apparent, except when the paralysis extended to the sphincter also, when the constant dribbling away of urine would render the distended condition of the bladder less obvious. Quite recently I saw a case of retention of this kind on the second day after labour. The bladder was very full, but the slight occasional escape of urine very nearly obscured the real state of the case. Cases of a more chronic nature sometimes present themselves: the bladder is largely distended, simulating abdominal tumour, and yet, the escape of urine being tolerably regular, attention is not called to the condition of the bladder itself. Lamentable results have followed under such circumstances from the want of a correct diagnosis. In cases of paraplegia, there is paralysis of the walls of the bladder, which, however, is more often present towards the close of the affection, the paralysis at first extending, in a marked degree, only to the sphincter. Chronic cases of paralysis of the bladder are characterised by the offensive condition of the urine, due chiefly to partial constant retention of the secretion within this organ.

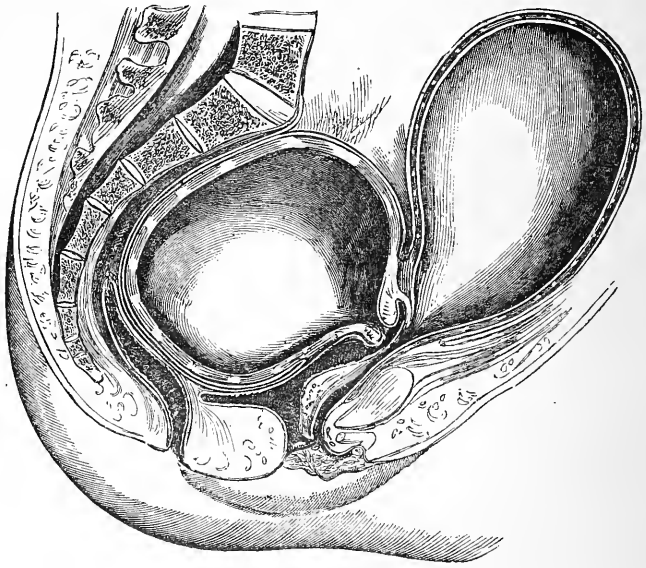
In cases of *organic disease of the bladder—cancer*, *e.g.*—there is frequently difficult micturition accompanied with bloody urine; micturition is also both frequent and painful. In another more rare disease of the bladder, viz. *polypus*, the urine may be prevented by the polypus from escaping into the urethra.

Organic Stricture of the Female Urethra.—In cases where the difficult micturition is due to this cause, the difficulty is more or less persistent, though liable to exacerbations; the bladder is

evacuated slowly, the stream is small, pain is at times present, and the difficulty, as a rule, slowly increases as time advances. The history of the case might be of some assistance in the diagnosis; but an examination is of course essential. *Vascular tumour of the urethra*, or *polypus of the urethra*, may be the cause of difficult and painful micturition. In the case of polypus of the urethra, there is difficulty and straining in micturition, and there may be occasional passing of blood. *Cysts or other tumours of the vagina*, if growing near the urethra or neck of the bladder, may produce difficult micturition. *Inversion of the Bladder.*—This rare condition will be mentioned further on, in connection with 'painful' micturition, but it also occasions 'difficulty.'

Displacements of the Uterus.—Connected as the neck of the bladder is with the uterus, dislocations of the latter involve a certain amount of displacement of the former. *Retroflexion or retroversion of the uterus*, and especially of the *gravid uterus*, produces difficult micturition in a marked degree. The bladder is emptied with great difficulty in such cases; the urethra, as shown in the annexed drawing (fig. 132), is thrust upwards behind the

Fig. 132.



pubes, elongated, stretched, and pressed upon posteriorly by the uterine tumour. In early pregnancy, difficult micturition, per-

sisting for some time and increasing, would lead us to suspect retroflexion or retroversion to be present, an important fact, for in order to treat these cases satisfactorily, the early recognition of their true nature is necessary. The other signs of retroversion of the gravid uterus are, flattening of the hypogastric region, involuntary straining or tenesmus, dragging in the loins and groins, constipation, &c.

Enlargement of the uterus, from the presence of *fibrous or other tumours*, may also produce difficult micturition; indeed, this symptom is very commonly observed in the early stage of this affection. In cases of fibrous tumour of the uterus, a curious phenomenon is sometimes observed, not, probably, peculiar to these tumours, namely, the manner in which ability to evacuate the bladder is affected by the position of the body. Thus, a lady who consulted me had had a large fibrous tumour of the uterus for seven years; of late there had been occasional difficulty in micturition, which she had always been able to overcome by lying flat on the face. Here the uterine tumour was moveable, and when the patient threw the body forwards the pressure of the uterine tumour was removed from the vesical outlet. Sir C. M. Clarke records a case in which the patient was capable of voiding small quantities occasionally if she lay on the back with the pelvis a little raised.* (See also p. 135, where a very interesting case of retention of urine is related.)

During the descent of the fœtal head through the pelvis in labour, there is difficult micturition, the canal of the urethra being partially or completely occluded by pressure.

In *prolapsus of the bladder* (cystocele) the same symptom is observed; the position of the urethra is here precisely the opposite to that in retroflexion of the uterus, the canal being bent downwards instead of upwards. In these cases of cystocele the patient evacuates the bladder by simply pushing the tumour upwards; this restores the urethral canal nearly to its normal position.

Tumours of the ovaries, as long as they remain in the pelvis, frequently occasion great difficulty in micturition; when, in process of growth, they rise above the pelvic brim, the pressure on the urethra is removed, and, so far as the symptom now alluded to is concerned, the patient improves.

In short, difficult micturition may be caused by any tumour in the pelvis capable of exerting pressure on the canal through which

* *Op. cit.* p. 254.

the contents of the bladder are evacuated. It is characteristic of most of those cases in which the difficulty of micturition depends on pressure by tumours, &c., within the pelvis, that the difficulty is more or less chronic, and will be found on enquiry to have lasted for some time, unless in cases where the pelvic tumour is of very rapid growth. An instance of the latter exceptional kind we have in cases of *peri-uterine hæmatocele*, where blood rapidly effused in the neighbourhood of the uterus forms a considerable tumour, and, in consequence, gives rise to difficult micturition.

Micturition Painful.

Here pain, during or in consequence of micturition, is the prominent symptom. There may be difficulty; but the pain attending it is the circumstance chiefly attracting attention.

Micturition may be painful by reason of *abnormal conditions of the urine itself, of the bladder, of the urethra, of the vaginal mucous membrane*, or in consequence of *dislocations* produced by affections of other adjacent organs.

Urine.—The morbid conditions of the urine alluded to are undue acidity or alkalinity, presence of gravel, mixture of the urine with blood, in cases of Bright's disease, in cases of calculus of the kidney, cancer of the bladder, or from any other cause. If the urine be of an irritating quality, it often produces excoriation of the vaginal outlet.

Bladder.—Cystitis, chronic or acute, is accompanied with pain during micturition, and there is often a great degree of frequency present at the same time. In these cases of cystitis, pain is present more or less constantly, as well as during the passage of the urine from the bladder. Cystitis itself may arise from the presence of a stone in the bladder, or from partial or complete retention of urine. In cases of calculus, there is pain on motion and at variable times; the pain during micturition is not considerable, as a rule, but there is generally pain just at the end of the process. The painful micturition in cystitis depends either on the condition of the urine, which is often very irritating, or on the associated inflammation of the urethra.

In *malignant disease of the bladder*, the pain following micturition is a marked symptom, but it is associated with pain at other times also, with frequency of micturition, with turbidity of the urine, occasional presence of blood, &c. The disease in question is rare; the affection with which it would be most liable to be con-

founded is organic disease of the kidneys. To settle the point, an examination of the bladder would be necessary.

Urethra.—Painful micturition is, in the majority of cases, dependent on morbid conditions of the urethra. In urethritis, whether of specific character or not, there is pain of a burning character (scalding, as it has been appropriately termed), which is more or less constant; but during the passage of the urine it is very intense. Micturition is not only painful, but very frequent. The suddenness of such an attack is, as a rule, characteristic of the presence of an inflammatory condition of the urethra. The symptoms present in inflammation of the urethra of a specific nature, *i.e.* produced by the gonorrhœal virus, are not, however, always characteristic. There is generally great pain in micturition; this pain is of a burning character, and is associated often with a spasmodic contracted state of the sphincter, to which the pain experienced is partly attributable. The presence of an urethral discharge, and the moral evidence attainable, would assist us in coming to a conclusion (see p. 453). In cases of gonorrhœal inflammation of the urethra, the stage of acutely painful micturition does not extend usually beyond two or three days; it attends the outset of the inflammation, but is less marked subsequently. We also find inflammatory conditions of the urethra as the result of mechanical injury, as from masturbation, too frequent or violent sexual intercourse; or the inflammation may be the result of vesical irritation, as in cystitis or calculus.

An obstinate form of chronic urethritis, unconnected with gonorrhœa, has been noticed by Dr. Ashwell and by Dr. M'Clintock, as giving rise amongst other symptoms to painful and very frequent micturition. There is pain also irrespective of micturition, and pain is produced by passing a catheter. The condition appears to be a chronic inflammation of the mucous membrane lining the whole of the canal.

In cases of vascular tumour of the meatus the pain present is, as a rule, very severe, so considerable indeed that the patient dreads the process of evacuating the bladder. Painful micturition, extending over a considerable time, in a middle-aged woman, should lead us to suspect the presence of this affection. Examination of the meatus would then be necessary. In children, *eversion of the mucous membrane of the urethra, or inversion of the bladder itself* is in some rare instances a cause of difficulty and pain in micturition.

Another class of cases of painful micturition is that in which

the bladder and urethra are unaffected, but, the *ostium vaginæ* being in an inflamed condition, the passage of urine is productive of pain from the contact of the latter with the inflamed surface. Certain forms of leucorrhœa are associated with painful micturition, in consequence of the existence of this inflammatory condition of the outlet of the vagina. When the upper and inner part of the thighs are excoriated by contact with irritating discharges, such as are present in the ulcerative stage of cancerous disease of the uterus, and under some other circumstances, the patient will lead us to infer that there is painful micturition, the pain arising in the latter case also from contact of the uterine with a raw inflamed surface. The immediate neighbourhood of the outlet of the urinary meatus may be inflamed as the result of masturbation. I have been consulted in a case of this kind, in which painful micturition was the symptom most prominently attracting attention.

Alterations in the position of the uterus, by which the urethra is drawn out of its place, alterations of the bladder itself, or tumour of adjacent organs, may produce difficulty in micturition, as already pointed out. The difficulty is generally accompanied with more or less pain; but the pain is not, as a rule, the prominent symptom, though it may be so in a few exceptional cases. With a little care in cross-examination, it may generally be made out whether the pain or the difficulty came first in order; and this point is of importance in reference to the diagnosis.

Micturition Frequent.

There is, perhaps, no one diseased condition of the vagina, uterus, bladder, or adjacent organs, which may not, at one time or other, give rise to frequency of micturition, to say nothing of the varying conditions of the urine which may occasion the same phenomenon. Frequency of micturition can hardly, then, be considered as characteristic of the presence of any one diseased or altered condition.

Frequent micturition is often an early sign of pregnancy. During the first two months of gestation in primiparæ it is very generally present. Towards the latter end of pregnancy, also, it is pretty frequently observed. In hysteria, frequent micturition is a symptom often present during the attacks.

Displacements of the uterus may any one of them occasion frequent micturition; but more often difficulty and pain during micturition are produced thereby. *Ovarian* or other pelvic

tumours occasion frequent micturition, owing to pressure on the bladder, as before remarked. Urinary difficulties are more frequently present during the early than the later stages of these tumours; when larger, they rise out of the pelvis, and the patient suffers less. One of the most important causes of frequent micturition is *retroflexion of the gravid uterus*, a condition in which urinary difficulties are rarely absent. There may be difficulty alone, but more generally difficulty and frequency of micturition are noticed; the latter may alone be observed. *Organic affections* of the uterus, as cancer, fibroid tumour, polypus uteri, or simple hypertrophy, or an inflammatory or hyperæsthetic condition of the organ, may, each of them, give rise to frequent micturition. Pressure on the bladder, and consequent frequent micturition, may be produced by abscess in the cellular tissue between the bladder and vagina, or by effusion of blood into the peritoneal cavity around the uterus in peri-uterine hæmatocele.

Dysmenorrhœa is often associated with frequent micturition; the tenesmus of the uterus extends to the bladder.

Certain conditions of the bladder itself may give rise to frequent micturition. *Calculus of the bladder*, *cystitis*, *cancerous disease of the organ*, the condition known as the '*irritable bladder*,' occasion this symptom, which is, moreover, observed in the early stage of the affections in question. The *presence of blood in the urine* occasions frequent micturition, as do also *various disordered conditions of the urine*. *Irritation propagated from the kidneys*, when these organs are diseased, *or from the rectum*, as when *hæmorrhoids* are present, may occasion frequency of micturition. Cases in which hæmorrhoids have to do with disturbances of the function of the bladder not seldom remain for some time obscure.

Inflammation of the urethra, as in gonorrhœa, or occurring irrespective of gonorrhœa, is a cause of frequent micturition: the urine is then passed in drops, with scalding pain. *Vascular tumour* of the meatus occasions frequency of micturition, distinguished from inflammatory conditions by the long duration of this symptom in the former case.

Micturition Involuntary.

The conditions under which this symptom may be observed are the following.

Fistulæ in the Vesico-Vaginal Septum.—In such cases, the

patient has hardly the slightest control over the evacuation of the bladder, the urine escaping from the bladder by the unnatural opening as fast as it is secreted. The condition dates from a definite period, at which time the vesico-vaginal septum was injured, and since when there has been involuntary micturition. The formation of these fistulæ is generally connected with the act of parturition; but *syphilitic* or *cancerous* ulceration may be the source of the evil. If the existence of fistula be suspected, the vagina and the bladder must be carefully examined.

There are cases on record in which involuntary micturition was produced by the existence of a *vesico-uterine fistula*. Here the symptoms are very peculiar, but the nature of the case would be easily recognisable on careful study of its history, combined with examination of the vagina. If the urine were seen issuing from the os uteri, this would conclusively determine the question.*

At the latter part of *pregnancy* micturition is often involuntary, either entirely so, or only when the patient is in certain positions. The diagnosis under such circumstances presents no difficulty.

Retroflexion of the gravid uterus generally occasions great distension of the bladder; and not unfrequently a case of this kind comes before us in this form:—the patient complains of involuntary micturition; and, on examination, it is found that the condition really present is one of *retention of urine*, produced by retroflexion; small quantities from time to time escaping, owing to the extreme distension of the bladder. The period of pregnancy at which this distension of the bladder most commonly occurs is the fourth month. The distension of the bladder was supposed by William Hunter to be the cause of the dislocation of the uterus. Dr. Tyler Smith has shown that the retroversion (in many cases, at all events) is the primary evil; the fact being, that the retroversion existed before the pregnancy occurred.†

When the bladder is paralysed partially or entirely, as in the course of fevers, &c., great distension of the organ and *overflow* may occur, as in the case of retroflexion just noticed.

After parturition there is often involuntary micturition for a few days, which may extend to weeks or even longer. The muscular structure of the urethra has in such cases undergone undue pressure and injury during the act of parturition. In women who

* A most interesting case of this kind is related by Dr. Leishman, in the *Glasgow Medical Journal*, October 1861. The patient in this instance could only retain urine within the bladder when lying on the side.

† *Obstetrical Transactions*, vol. ii.

have large families, the neck of the bladder occasionally becomes thus permanently weakened, and the control over the bladder is subsequently always imperfect.

Tumours of the ovaries now and then produce involuntary micturition; the tumour drags on the bladder, and mechanically interferes with the action of the sphincter. This effect is more commonly witnessed when the tumour is large. Other tumours in the pelvis or neighbourhood may have a like effect.

Great hypertrophy of the nymphæ was a cause of incontinence of urine in a case recorded by Breslau.* Owing to the traction of the enlarged nymphæ, the action of the sphincter was interfered with.

Cicatrization of the vaginal canal, after parturition, was the cause of involuntary micturition in a case under my care at the Hospital. Here it was supposed for some time that there was a fistula high up. The cutting through the cicatrices necessary to explore the upper part of the vagina led to the discovery that there was no fistula, and to the cure.

Cancer of the uterus may extend to the neck of the bladder, and give rise to involuntary micturition, due then to ulceration of the under portion of the urethral canal, or of the bladder itself.

Congenital defect of power over the sphincter of the bladder is very rare, but the possibility of its existence should not be forgotten. Congenital incontinence of urine may be due to *imperfect formation of the urethral canal associated with epispadias*, of which a very interesting case is recorded by Dr. Röser.† The case was that of a young woman, aged 18, who had an incontinence from birth. The clitoris consisted of two parts; the upper and anterior portions of the orifice of the urethra were wanting, and the orifice itself was very large. A cure was obtained by bringing the separated halves of the clitoris together by a plastic operation.

2. MICTURITION IMPOSSIBLE.

In cases where the patient is absolutely unable to pass urine, it is evident that there is either an impediment to the escape of the urine from the bladder, or that there is no secretion from the kidneys. In other words, the case is one of *retention*, or of *suppression of urine*. In the distinction of these two conditions, it is to be remarked that retention is, as a rule, accompanied by a

* Scanzoni's *Beiträge für Geburtsk.* 1858.

† *Würt. Corr. Bl.* 1861, and Schmidt's *Jahrb.* vol. cxii. p. 47.

desire to evacuate the bladder, which is for the most part absent in cases of suppression: the exception is noticed in cases of paralysis of the lower extremities, and some other instances where there is *sensational* as well as *motor* paralysis. Cases are rare in which there is a possibility of taking suppression for retention; but it might prove a dangerous mistake, and it is one more within the limits of possibility, to overlook retention, and set down the condition as one of suppression. Such cases occur in connection with the presence of diseases producing great prostration, fevers being the chief of these. The patient may for a considerable time have no evacuation from the bladder; and, this circumstance escaping attention, the bladder is allowed to go on increasing in size. The obscurity of the case is often increased by the fact (previously alluded to) of a small quantity of urine escaping from time to time from the distended organ, and retention all the while persisting to a dangerous degree. The fact that the patient has expressed no desire to evacuate the bladder must be disregarded; and, after a certain time has elapsed, an examination should be made, in order to ascertain whether the condition present is one of retention or suppression. A case is related by L. Vandeweren,* in which a woman believed to be dropsical died from the effects of rupture of the bladder due to retention. The definitive decision between retention and suppression depends, then, upon the results of examination.

After labour the bladder is not seldom left distended for too long a time, owing to the patient experiencing no desire to evacuate it.

Cases in which retention is combined with involuntary micturition have been already disposed of.

Retention produced by inability to evacuate the bladder, coupled with distress and strong desire for the same, may arise from mechanical pressure on the neck of the bladder, of whatever kind. Whatever, in fact, may produce mechanical *difficulty* may produce also *retention*. *Fibroid* tumours of the uterine wall, enlargement of the uterus by fluid, &c., act in this way, as do also, but more rarely, *ovarian tumours*. The explanation given by Dr. West of this fact is, that the uterus is central, and therefore more likely, when enlarged, to press on the neck of the bladder and produce retention, than an ovarian tumour, which is generally lateral. In such cases, difficult micturition has generally preceded the reten-

* Larbaud, *Recherches sur le Catarrhe, la Faiblesse et la Paralysie de la Vessie*, p. 68.

tion. *Retroflexion of the uterus*, or *retroversion* of this organ, when suddenly produced, may also cause retention, which either supervenes suddenly, or is not detected for a long time in consequence of partial escape of the contents of the bladder occasionally taking place. In cases of *prolapsus of the uterus*, retention may occur during the catamenial periods, when the organ is larger and heavier, and in cases of prolapsus of the bladder itself, chronic inversion of the uterus, &c.

Another form of retention, not by any means uncommonly observed, is that witnessed in *hysterical* patients, arising from spasmodic contraction of the sphincter, associated, perhaps, in some cases, with an erectile condition of the clitoris. Retention from this cause is accompanied with a good deal of acute pain in the hypogastrium. The attack is of a more acute character than in the cases before considered. There is generally a history of previous attacks of a similar character. In many cases, the nature and cause of the presumed retention cannot be made out without an examination.

Lastly, there are cases in which no urine is passed because there is none in the bladder. I lately saw a case in which the ureters were occluded by cancer of the base of the bladder, and no urine could pass into the bladder. This kind of *suppression* has been known to be produced by pressure of large ovarian or other tumours on the ureters. More ordinarily, however, suppression in the true sense of the word is due to other causes, the consideration of which does not come within the scope of the present enquiry.

CHRONIC INFLAMMATION OF THE URETHRA.

Occasionally we meet with a very troublesome inflammatory condition of the female urethra. The canal itself is in an abnormal condition: it presents to the finger a hard thickened cord, which may or may not be tender to the touch; the introduction of the catheter may be attended with much pain. In many cases we have urethritis as a consequence of *gonorrhœal* infection; there is in such cases redness and tenderness, and there is a puriform discharge from the urethra, scalding pain during micturition, and bloody urine. The gonorrhœal inflammation of the urethra continuing a long time, we find occasionally further effects —viz. production of a hard thick condition of the urethra, such as that above described; and apart from a careful scrutiny of the history of the case, there may be nothing to indicate whether the

chronic urethritis present be of gonorrhœal origin or not. Frequency and pain in micturition, slight discharge, pain during sexual intercourse—these are the symptoms usually present in these cases.

Treatment.—The treatment of chronic urethritis consists in rest, the use of the tepid hip-bath, avoidance of all sources of irritation, observance of cleanliness, use of astringent lotions, or injection of weak solutions of alum or sulphate of zinc into the urethra itself. Such treatment will be sufficient in simple cases. Of internal remedies copaiba is undoubtedly the most effectual, and it may be recommended to be given in conjunction with application of the other remedial measures mentioned, in all cases, and whether suspected to be of gonorrhœal nature or not. The disease is undoubtedly a difficult one to cure; especially is this the case where a thickened condition of the urethra is present: great patience is generally required in order to bring the case to a successful issue. The application of nitrate of silver, powdered and diluted with sugar, or in solution, is sometimes necessary, especially in cases where the mucous membrane of the urethra is ulcerated.

STRICTURE OF THE URETHRA.

This is a condition very rarely met with in women. It necessarily occasions difficulty in micturition. By introducing a probe into the canal, the presence of an obstruction is readily recognised. It is generally traceable to the effects of mechanical injury, as from the pressure of the fœtal head, contusions from instruments during labour, accidental injuries from without, contraction following syphilitic ulceration, or to chronic inflammation associated with gonorrhœa. In the elaborate work on stricture of the urethra, by Sir Henry Thompson,* will be found an account of the few cases of stricture of the female urethra which have been placed on record by others or observed by himself. This surgeon confirms the observations of previous authors that the obstruction is usually met with close to the external orifice of the urethral canal. It may affect the canal for a variable distance.

Treatment.—'In the management of the organic contractions of the urethra,' says Sir Henry Thompson, 'the use of dilatation,

* *The Pathology and Treatment of Stricture of the Urethra.* The Jacksonian Prize for the year 1852. London: Churchill. 2nd ed. pp. 379 *et sequent.*

assisted, when necessary, by a division of the opposing part . . . will generally be sufficient for their removal.' The shortness of the canal, and its great accessibility, should render operative measures easy of application.

VASCULAR TUMOUR OF THE URETHRA.

This is an exceedingly important affection. The tumour is an excrescence, bright red in colour, which grows just within the external orifice of the urethra, varying in size from a pin's head to a hazel nut. The tumour is usually more or less pediculated, and the pedicle may have a length, as I have myself seen, of a quarter of an inch. It consists of an hypertrophy of the mucous papillæ of the part, and the shape and appearance give one the idea of a vegetation growing on the mucous membrane. The tumour may be single or partially divided. The best account of the intimate structure of the tumour was given by Mr. Burford Norman, in the *London Journal of Medicine*, Feb. 1852. The growth is usually possessed of an extreme degree of sensitiveness. The symptoms produced are occasionally very severe, their intensity being out of all proportion to the size of the tumour. The chief symptoms are, difficulty, pain, and frequency of micturition, pain in intercourse, pain on walking, &c. The most constant sign is pain immediately after passing water, whilst the last few drops are escaping from the bladder. These tumours may give rise secondarily to several other symptoms, and in some cases the symptoms are so indefinite that the diagnosis remains for a long time obscure, more especially in cases where modesty induces the patient to refrain from giving such an explicit account of her symptoms to the medical attendant as to lead him to make an examination.

Treatment.—The tumour is best treated by carefully dissecting it off from the surface to which it is attached by means of a small scalpel, or scissors, and applying strong nitric acid lightly to the cut surface. If a difficulty is experienced in seizing it with the forceps, Dr. M'Clintock's plan of catching it in a loop of thread forming a kind of snare, may be adopted. Other methods of treatment, such as cauterisation with nitrate of silver, require a longer time, and are less satisfactory. There is hardly any affection to which women are liable which causes more uneasiness and discomfort, or which is removed more easily. Warty vegetations are sometimes observed growing just outside the meatus. In some cases

of this kind which came under my own notice the affection gave rise to very painful pruritus; in others a large crop of warty growths situated in this position had given rise to considerable difficulty and pain on intercourse, and it was found that, in this latter case, the growths were of syphilitic origin. In these cases removal by means of the knife was the treatment adopted.

EVERSION OF THE MUCOUS MEMBRANE OF THE URETHRA

has been noted by Lisfranc, M'Clintock,* and others. In such cases, a tumour of variable size, of a reddish, a dark red, or pale red colour, may occupy the position of the urethral aperture. It is easily distinguished from vascular tumour on attentive examination of the relations of the growth, and by the use of the catheter; and unless inflamed and very painful, it is capable of being pushed back and reduced.

Eversion of the Bladder is sometimes observed in very young children. It occurs in infants, probably in the same class of cases as those in which eversion of the rectum is noticed, and from a like cause—viz. violent straining during coughing, or possibly in the dysuria due to presence of ascarides. Dr. M'Clintock refers to a case observed by Dr. Beatty, of Dublin, in a child nearly two years old. The tumour was scarlet, the size of a chestnut, very painful. It was replaced by pressure, and the urethra found to be very large. Mr. Crosse, of Norwich, had related a precisely similar case in a child about the same age, and which was at first considered to be a vascular tumour of the meatus. An operation was about to be undertaken for its removal, when Mr. Crosse discovered the true nature of the tumour. In adults, eversion of the bladder only occurs where fistulous openings are present.

Treatment.—These cases of eversion of the urethra, &c., should be treated by reduction, by rest, and the careful application of lint dipped in cold water as a compress. The retention of a catheter in the bladder has been recommended, but it would seem calculated to increase the irritability of the parts.

* *Loc. cit.* p. 236.

RETENTION OF URINE

may result from a multitude of causes (see 'Diagnosis'). Here it is only necessary to point out the method of relieving the patient under such circumstances.

Warm fomentations frequently enable the patient to empty the bladder, but in many cases the use of the catheter is required.

Mode of Introducing the Female Catheter.—Ease in the use of the instrument is only to be attained by practice, but the operation is usually effected without much difficulty, by one conversant with the anatomy of the parts. The plan to be adopted is the following: The patient to be laid on her back; the operator is to stand on her right side; the right leg is to be flexed, the sole resting on the bed or couch. The operator then, by means of one finger of the left hand, carried from the abdomen over the pubes, ascertains the position of the clitoris, and of the urethral orifice just beneath it, and, having done this, the right hand, holding the gum-elastic or silver catheter, is passed under the right leg, and the point of the instrument guided into the urethral canal. The principal thing is to make certain, in the first instance, of the position of the clitoris and urethral orifice; the latter is known by the fact that the vaginal canal is immediately below it. If the finger be introduced into the vagina, the urethral canal must therefore be in the median line immediately above it.

It is convenient to have a slender india-rubber tube, five feet long, attached to the catheter. The urine then flows directly into the receptacle, placed on the floor.

In cases where the retention of urine is due to dragging upwards of the bladder by tumours of various kinds, and pressure on the urethra, the direction of the urethral canal is much altered. In such cases a gum-elastic catheter should be always used, and care is required in order to avoid injuring the walls of the canal.

AFFECTIONS OF THE BLADDER.

Chronic inflammation of the bladder is an affection which in some shape or other comes before us rather frequently. After parturition, after operations about the genital organs, it is not unusual for the mucous membrane of the bladder to take on an

inflammatory action, which at one time results in the exfoliation of the lining membrane, at another leads to chronic cystitis, with constant secretion of a ropy mucus, an ammoniacal state of the urine, occasional passage of blood, great distress and frequency in micturition, pain in the region of the bladder, and other troublesome symptoms. It is important to bear in mind, that the symptoms referable to the bladder are frequently really due to morbid conditions of the kidneys or ureters, or both. Information respecting the diseases of these organs will be found in standard works on medicine and surgery. Incontinence of urine is an affection liable to supervene on labour, when the urethra has been subject to a long-continued pressure.

The timely use of the catheter after labour will prevent that destructive *cystitis* which may be produced by inability of the patient to evacuate spontaneously the contents of the bladder. If cystitis be actually present, with fever, pain, and tenderness, leeches may be required. Demulcent liquids should be given, such as barley water, and all irritant articles of food avoided. Rest is exceedingly important.

In the *chronic* form of the disease, cystitis is best treated by the administration of the diluted mineral acids; uva ursi and pareira brava are medicines very generally found serviceable, in combination with diluted nitro-muriatic acid. Sir Henry Thompson has introduced the use of a decoction of the underground stem of the *triticum repens*, in cases of chronic cystitis in the male sex, and has found it of very great service in relieving the various distressing symptoms present in such cases. I have found it equally efficacious in the chronic inflammatory affections of the bladder in women. This distinguished surgeon states in reference to the use of demulcent decoctions, infusions, &c., in affections of the bladder, that large quantities are necessary in order that they may prove beneficial. Dr. West speaks highly of the employment of a seton introduced just above the symphysis in cases of chronic cystitis, and I have seen great benefit from counter-irritation in this locality. The general treatment of the patient in these cases is a matter of great importance; some patients require a liberal diet and regimen, while with others the indication is quite the opposite. The pain and suffering present in cases of cystitis must be relieved by opiates, and these require frequently to be given in considerable doses.

For the relief of incontinence of urine after labour, which may be more or less complete in degree, time is the great remedial

agent. Repeated ablutions of the external genitals have a good effect in restoring the lost tonicity of the sphincter of the bladder. As a general rule, tonics are indicated, and the patient is to be encouraged by the hope—generally a well-founded one—that in the end the lost control over the evacuation of the bladder will be regained.

POLYPUS OF THE BLADDER

is a condition which rarely comes under our notice. An instance, recorded by Mr. Birkett, is alluded to by Dr. M'Clintock, of *polypus* arising from the interior of the *bladder* and projecting through the urethra. The case occurred in a child five years old: the polypus grew from the upper boundary of the neck of the bladder, and formed a red mass projecting through the meatus and between the labia. Excision was performed. The child—greatly exhausted at the time—died. Dr. M'Clintock is probably right in thinking that the écraseur would suit such cases best. Dr. M'Clintock states that only eleven instances of this disease have been placed on record.

SUPPLEMENTARY CHAPTER.

STERILITY.

General Remarks—Signs of Virility in the Man.

Causes of Sterility in the Woman.—1. Mechanical Causes; Condition of Hymen, of Ostium Vaginæ, of Vagina, Presence of Tumours, &c., interfering with Sexual Intercourse; Spasm of Vagina; Conditions of the Uterus, Imperfect Development, Polypi, Flexions, Narrowness of the Uterine Canal, Chronic Inflammation: Diseases of the Ovaries; Altered Conditions of the Fallopian Tubes; Ill-timed Intercourse; Masturbation, Follicular Disease of Vulva; Disease of Rectum.—2. Abnormal Condition of the Secretions; Leucorrhœa, &c.—3. Constitutional or General Causes; Sexual Frigidity; Over-feeding and Luxurious Habits; Obesity; Syphilis.

Treatment.

There is hardly any pathological condition of the generative organs of the female which may not, directly or indirectly, have to do with sterility; hence, success in the diagnosis of the cause of sterility involves a wide and comprehensive view of the subject. In many cases of sterility where the cause is very readily removable, it is overlooked because it is not sought for. Individuals are sometimes long and fruitlessly subjected to courses of hygienic and general treatment for the cure of sterility in cases where a very simple exploration of the generative organs would have shown the futility of such treatment. But while the causes of sterility are such as in many cases we can detect, explain, and remove, there are not a few cases in which our attempts are baffled, and for the solution of which we must be content to await the further advance of knowledge.

It need not be stated how important it is in many cases that are likely to come before us that we should be able to resolve the question—What is the cause of the sterility? The reproach of childlessness is one which is often a very grievous one to bear, and one which the patient would often give her all to remove. There is then a double inducement to the careful study of the subject—its inherent difficulty, and the importance of overcoming that difficulty.

The only practical method of treating the subject of the diagnosis of the causes of sterility is to state definitely and systematically what are the possible causes. The following list of these possible causes has been made out chiefly on the basis of facts actually observed and recorded.

The question which naturally first occurs to us in ascertaining the cause of the sterility is—To whom is the infertility to be attributed, the woman or the man?

If the male organs be intact, and questions with reference to power of erection and penetration be answered satisfactorily, the question, What is the cause of the sterility? may generally be dismissed as far as the husband is concerned. The cases are few in which, if the testes be apparently sound, the secretion itself is deficient in fertilising power.* If the husband be in good health, and have lived temperately, the power of impregnating often exists up to a very advanced period of life; but in those who have, from an early period of life, been addicted to excesses, the sexual power may fail prematurely. In cases of the latter kind, enquiries will readily show the nature of the deficiency.

CAUSES OF STERILITY IN WOMEN.

The first point to which our enquiries tend is as to the patency of the canals through which the spermatic fluid and the ovule must pass in order to come into contact. The vagina, the uterus, the Fallopian tubes, must offer no impediment, or sterility is inevitable.

We may consider the causes of sterility in the woman under the following heads: 1. Mechanical causes; abnormal condition of some part of the generative passages, such as to interfere with the proper transit of the spermatic fluid or of the ovules; 2. Abnormal conditions of the secretions of the generative passages; 3. Constitutional and general causes.

1. MECHANICAL CAUSES OF STERILITY.

a. Abnormal Conditions of the Hymen.—This membrane is sometimes dense and firm, and effectual intercourse is prevented.

* Mr. Curling contends that in the man an inaptitude to impregnate may coexist with the capacity for sexual intercourse—that, in fact, the man is subject to *sterility* independently of virility. The microscope has been occasionally employed with the view of ascertaining the presence or absence of spermatozoa in the seminal secretion, and it is asserted that they have been found absent in some cases of sterility. *See* Dr. Marion Sims's work on Sterility.

Cases in which this condition is met with usually come under our notice owing to a complaint on the part of the husband that intercourse cannot be effected satisfactorily. In some such cases we find on enquiry that the menstrual flow proceeds regularly and without much apparent disturbance; the hymen is not quite complete, but is perforated at one or more points sufficiently to allow of the passing of the menstrual fluid, but not sufficiently so to allow of perfect intercourse. In such cases, sterility generally, but *not always*, exists; for it has been found in cases very well authenticated, some of which may indeed be found in Mauriceau,* not to cite authorities much more recent, that a nearly perfect hymen does not necessarily prevent fecundation. In some of these cases the hymen has been found so dense and firm at the final termination of pregnancy, as actually to impede parturition. Thus the menstrual phenomena may be present, and yet the hymen may be imperforate in a certain degree. In another class of cases the woman has never menstruated, and the hymen is found complete, absolutely preventing the escape of the menstrual secretion. In some rare cases the hymen is imperforate, but is at the same time yielding, so much so, indeed, as to allow of ordinary intercourse. A case in which the hymen is absolutely imperforate generally arrests attention from the fact that the menstrual flow has never been observed, and in the case of married women, the aid of the practitioner is more frequently called in for this reason than because of the sterility with which it is also associated. The physical examination will always and readily demonstrate the nature of the impediment to fecundation which exists in both of these important classes of cases.

b. Narrowness or partial Closure of Ostium Vaginæ or Vaginal Canal.—The vagina is in rare instances *partially closed* at different parts of its course by bands constituting partial strictures of the canal, and rendering intercourse difficult or incomplete, and so leading to sterility. Such a condition of the canal may be congenital, or it may be brought about in consequence of previous difficult parturition, laceration and cicatrisation of the torn part leading to contraction, and to partial, or even complete, closure of the canal. The strictures thus resulting may be low down, at the position of the hymen, or higher up near the os uteri.

c. Or the vagina may be *altogether absent*, or constituted by a small cul-de-sac, barely admitting the point of the finger. This

* *Maladies des Femmes.*

condition may be congenital, or may be produced by difficult labour, laceration of the walls of the canal having been followed by cicatrisation and contraction of the same. In the congenital variety, menstruation is absent because of the usually associated absence or defective development of the uterus; in the acquired variety, menstruation may or may not be absent according as the canal is completely closed or not. The canal may be large enough to allow of menstruation occurring, but too small to admit of sexual intercourse, and consequently of impregnation.

d. Tumours, &c., interfering with Sexual Intercourse.—The aperture of the ostium vaginæ being natural in point of size, sterility may exist because of the presence of a tumour or growth filling up the canal, or so situated as to interfere with efficient sexual intercourse. The presence of an *enlarged clitoris* has been known to have this result.

The canal of the vagina may be occupied by a growth interfering in like manner with intercourse. *Hypertrophy of the cervix uteri* forming a conical tumour sometimes of considerable size, *polypus of the uterus* hanging down into the vagina, or *prolapsus* of the uterus itself, may in particular cases give rise to sterility.

e. Spasmodic Affection of the Ostium Vaginæ—Vaginal Spasm —Vaginismus.—This condition has until recently had hardly a sufficiently prominent place assigned to it in the list of causes of sterility. Its relation to sterility is a very important one. Recently it has excited the attention of more than one observer —Debout, Michon, Marion Sims. The affection has been described in some of the older established text-books. The spasmodic contraction is induced or aggravated by attempts at sexual intercourse. Owing to the extreme sensibility of the parts in the first, and to the mechanical closure of the canal in the second place, sexual intercourse is almost or quite impossible, and there is consequently sterility. The nature of the affection has been discussed in a previous chapter.

f. Condition of the Uterus.—Absence or imperfect development of the uterus is a cause of sterility the existence of which is only to be substantiated by an internal examination (see ‘ Examination of the Vagina ’). There is a class of cases which comes under the present category, and which is very interesting from a practical point of view—viz. that in which the cervix uteri, or rather the vaginal portion of the cervix is small and somewhat infantile in character, the opening being also small. In many such cases

infertility has been observed, and has been remedied by simply incising the os uteri, and thus enlarging the aperture.

Infertility is by no means a necessary consequence of absence of the catamenia. It has been repeatedly proved that women may conceive who have never menstruated; and if it became a question whether marriage was allowable in a particular case, the simple absence of this function could not be considered as *definitively* against the propriety of such a procedure, unless that absence were accompanied by other and more essential sexual deficiencies.

The other conditions on the part of the uterus which may cause sterility will next be enumerated. First are to be considered those cases in which the cavity of the uterus is occupied by tumours—*polypi* of the uterus. They produce sterility in two ways: first by closing the canal of the uterus and preventing the contact of the spermatic fluid with the ovule; and secondly by determining the speedy ejection of the young ovum in cases where impregnation has actually occurred—in other words, by producing abortion at a very early period.

The presence of a polypus, even of a somewhat considerable size, in the uterus, does not necessarily produce sterility. *Fibroid tumours of the uterus* are effectual both in the production of abortion and in the actual prevention of impregnation; when the tumour is situated between the uterine mucous membrane, and encroaching gradually on the uterine cavity producing a narrowing or partial occlusion of the cavity of that situation, impregnation is prevented. Out of 69 cases of fibroid tumour recorded by Scanzoni, 35 had never conceived. According to my own experience, fibroid tumours generally altogether prevent conception.

Chronic hypertrophy of the uterus, variously termed, also chronic inflammation of the uterus, 'chronic infarctus,' is a condition unfavourable to fecundity. Scanzoni attributes the sterility of prostitutes to the existence of this alteration. This condition is generally accompanied with congestion and undue fulness of the neighbouring blood-vessels, alike unfavourable to healthy ovulation and to the normal development of the ovum within the uterus.

That form of atresia produced by *flexion of the uterus* is, I believe, by far the most common cause of sterility. This subject has been fully considered in the chapters on 'Flexions' and 'Dysmenorrhœa.' The flexion produces sterility because it prevents the passage of the seminal fluid into the interior of the uterus. The cause of dysmenorrhœa and of sterility is often the same.

The frequency with which anteflexion of the uterus is associated with sterility is very great.

The *uterine cervical canal* may be *comparatively very narrow*, the seat of the constriction being either at the upper extremity of the cervical canal, where it joins the body of the uterus, or lower down at the os uteri. And there may be *congenital closure* of the canal at the positions indicated. In cases in which there is actual closure of the canal, the os uteri being imperforate, menstruation is of course absent, and there may be menstrual retention. In cases where there is an opening, but a small one, the symptoms present are, speaking in general terms, those of dysmenorrhœa. The opening is often small, owing to flexion and consequent valvular closure, but when the os is drawn down, and the canal straightened, the sound enters readily enough.

Conical, or flexed, or elongated condition of the vaginal portion.—Dr. Marion Sims insists, and I believe correctly, on the influence exerted by an abnormal condition of the canal at its lower portion in the production of sterility. The vaginal portion is sometimes too long, and when this is the case it has a tendency to become curved. This curvature (of the portion of the canal within the vagina, be it understood) is sometimes so great that the long tapering cervix is almost doubled on itself. See Chapters on 'Flexions.' The patency of the canal is thus seriously interfered with, and it is important to bear in mind that dysmenorrhœa is not necessarily associated with flexion of the canal at this point. The vaginal portion should have a certain length, shape and direction, and a deviation in either of these particulars may lead to sterility.

Valvular closure of the os.—This condition arises when one of the lips of the os uteri is considerably larger than the other. The os has then a crescentic shape, and the orifice is virtually less than it should be. Sterility may be associated with it.

The os uteri sometimes *becomes closed*, and sterility arises in consequence of the opposite sides of the canal becoming adherent after being torn. This is now and then a consequence of labour. In some cases it has been produced by the incautious or improper use of caustics.

Chronic inflammation and induration of the cervix of the uterus are causes of sterility: the opposite sides of the os are hard, firm, and the opening actually very small, although it may appear to be large. The canal is frequently distorted, and the opposite sides actually touching each other. The sound enters

readily, but there is nevertheless less patency of the canal than there should be.

In cases of *dysmenorrhœa* attended with expulsion of a membranous structure at each menstrual period, sterility is very generally observed. (See 'Dysmenorrhœa.')

g. Diseases of the Ovaries.—Cystic or other tumours of the ovary prevent conception in many cases where menstruation is still present; but the existence of disease in one ovary, or removal of one ovary by operation, is not incompatible with the occurrence of pregnancy. Disease of the ovaries interferes with the fecundity of the woman in two ways: directly, when the due secretion of ovules does not occur, and consequently either no ovules, or ovules in a morbid condition, are conveyed into the Fallopian tubes, in which case, however, menstruation would be expected to be absent, or at all events much disturbed; and indirectly, when the pressure of large tumours of the ovaries dislocates the uterus, and so disarranges the natural relations of this organ as to prevent both the passage of the ovule downwards and the entrance of the spermatozoa into the uterus; or when the dislocation in question leads to the ejection of the latter from the uterus at a very early period of its development. Careful physical examination of the abdomen and of the pelvic cavity through the vagina is necessary to exclude ovarian disease from the consideration.

h. Altered conditions of the Fallopian tubes may prevent the passage of the ovule into the uterus. Peritonitis occasionally produces such *adhesions of the peritoneum covering the pelvic organs* as to render it physically impossible for the ovaries to be grasped by the fimbriated extremities of the Fallopian tubes; thus the 'ovipont' cannot take place. *Atresia* or closure of the canal is a condition sometimes met with; a condition of course fatal to impregnation of the ovules from the corresponding ovary. This condition may be combined with *dropsy of the Fallopian tubes*. Fibroid tumours of the uterus occasionally produce occlusion of the Fallopian tubes.

i. Here may be mentioned a possible cause of sterility, important to bear in mind—*ill-timed sexual intercourse*. It is the fact that women have a much greater aptitude to conceive immediately after the cessation of the menstrual flow, and this, therefore, is the most favourable time for sexual intercourse. It is related that Catherine de Médicis, wife of Henry II. of France, became pregnant after having been sterile for many years, apparently in consequence of following the advice of the physician

Fernel, that sexual intercourse should only take place at the time in question.* It may turn out on enquiry, in particular cases of sterility, that it has been the custom to act in ignorance of this fact.

k. Under the next head may be included a number of causes occasionally, but by no means necessarily, leading to abortion. Thus, cases in which *masturbation* is practised, cases in which sexual intercourse is allowed to take place *too frequently*, cases in which the vulvar aperture is the seat of disease, as in *follicular inflammation of the vulva*, are those coming under this category most deserving of mention. *Diseases of the rectum* have been known to be associated with sterility.

2. ABNORMAL CONDITIONS OF THE SECRETIONS OF THE GENERATIVE PASSAGES.

Leucorrhœa.—Under ordinary healthy conditions, contact with the secretions of the mucous membrane lining the cervix, the uterus, and the vagina, does not at all impair the vigour and activity of the spermatozoa, in which the power of fertilisation resides; but these secretions may be so altered as to materially affect the activity of the spermatozoa, so as to prevent mechanically, by their viscidity and tenacity (Dr. Tyler Smith), the passage of these bodies into the cavity of the uterus. The vaginal secretion is naturally acid, the cervical mucus is naturally alkaline; the healthy degree of acidity and alkalinity respectively is not hurtful to the spermatozoa; but it has been shown experimentally that if the vaginal mucus be too acid, or the cervical mucus be too alkaline, the spermatozoa subjected to the direct influence of these secretions quickly lose their power of motion. The relations of leucorrhœa to sterility have been fully discussed by some late observers, by Dr. Whitehead,† Dr. Tyler Smith,‡ and Dr. Marion Sims § in particular: and each of these authors cites numerous cases of sterility associated with leucorrhœa, and in which there would seem to be little doubt that the influence of the leucorrhœa in producing the sterility was due in great part to the existence of this morbid condition of the secretions.

Coste ‖ refers to an anecdote related by Dubois bearing on the

* Montgomery, *op. cit.* p. 479.

† *On Abortion and Sterility.*

‡ *On Leucorrhœa.*

§ *On Sterility.*

‖ *Histoire générale et particulière du Développement des Corps organisés*, tom. i. p. 55.

questions now under consideration. A lady who had been for many years sterile, informed Dubois that, having been in the habit of always using an injection of cold water after sexual intercourse, she one day accidentally used warm water instead. The result was that, having been sterile for many years, she at last conceived. Coste ascertained by experiment that the spermatozoa of mammalia are prejudicially affected by the application of quite cold water, whereas the admixture of warm water with the seminal fluid rather promoted than not their activity. These facts have their importance. It is quite possible that mere increase in the quantity of the secretion poured out by the cervix uteri may interfere with impregnation; and, as the presence of a certain amount of fluid on the surface of the mucous membrane would appear to be necessary for the proper conveyance of the fertilising fluid, it is not unreasonable to suppose that, where the mucous secretions of the generative passages are deficient in quantity, sterility may be observed.

3. CONSTITUTIONAL AND GENERAL CAUSES OF STERILITY.

One of the conditions here to be mentioned is, *sexual frigidity*—a want of inclination for sexual intercourse. There can be no question that the connection of this frigidity of temperament with sterility has been very much overrated. Women conceive and bear children who evince little or no sexual inclination. This condition is only *necessarily* associated with sterility when the generative apparatus is deficient and imperfectly developed; and no positive deduction can be drawn from such disinclination as to the incompetency of the woman to conceive.

When great *general debility* and *anæmia* are present, it is often the case that conception does not occur. The ovarian function suffers in common with the functions of the body generally, and the woman is not apt to the procreation of children. With anæmia disorder of the menstrual functions frequently, as is well known, coexists; the cases are few in which, menstruation being present, the sterility is dependent on the anæmia.

Another condition, the opposite of that present in anæmia, is more often the cause of sterility—that, namely, produced by *overfeeding* and *luxurious habits*. It is matter of common observation that the labouring classes, amongst whom destitution frequently prevails, are prolific in a degree not witnessed in the higher ranks of society. 'It is,' said the late Dr. Marshall Hall, 'incontrover-

'tibly proved by Mr. Sadler, in his work on the Law of Population, 'that the fecundity of the human race is diminished by the 'indolent and luxurious mode of life prevalent among the rich, 'whilst it is augmented by the labouring habits and spare diet of 'the poor . . . the proportionate infecundity of the two being, in general terms, as 6 to 1.'*

In women who are *unusually fat* an inaptitude to conceive is often observed.

Syphilis.—It is well known that the presence of syphilitic disease in either parent is frequently the cause of abortion or of premature birth. It may be questioned, however, whether the presence of syphilis is not occasionally the cause of sterility by destroying the product of conception at so early a period of the pregnancy that the very existence of pregnancy is for that reason unrecognised—the woman being really capable of conceiving, but the product of conception quickly perishing. The effect of syphilitic disease in disturbing the normal growth of the decidua at the commencement of pregnancy has hardly been, as yet, the subject of attention; but it is quite possible that disease of the decidua of a syphilitic character may come hereafter to be a recognised pathological condition. Facts which have come under my own observation have led me to suspect that syphilis may give rise to the effect here alluded to.

Conclusion. In endeavouring to ascertain the cause of the sterility, it will be necessary for the observer carefully to examine into the history and antecedents of the patient, the manner in which menstruation is performed, and the general condition of the bodily health. Further, it will generally be necessary to examine the vagina and the external generative organs, and, if no cause for the sterility be there found, to examine the uterus. In carrying out the examination of the parts in question, the eye and the touch are both to be employed. In investigating the condition of the uterus, the speculum and the uterine sound, one or both, are required.

TREATMENT OF STERILITY.

The cure of sterility is dependent upon removal of the cause, whatever that may be, and the means of cure are necessarily almost as numerous as the causes. It is unnecessary here to consider these *seriatim*: the more so as the conditions leading to

* *On Constitutional Diseases of Females*, 1830, p. 7.

sterility frequently occasion other difficulties, dysmenorrhœa, &c., the treatment of which has been already discussed. In many cases the cure is impossible; in some instances a very slight mechanical treatment is all that is required; in a few, more elaborate surgical procedures are necessary, in order that the organs may be placed in conditions favourable to the occurrence of conception.

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